JOURNAL OF GAS LIGHTING, WATER SUPPLY, &c.

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EDITORIAL NOTES—GAS, &c.

Technical Programmes for the Approaching Annual Meetings.

JUST recently we were remarking in the "JOURNAL" on the growth of inter-communication between the German, the French, and the British central gas organizations; and the necessity of giving full opportunity for fostering this very desirable condition of things by arranging that the three annual meetings should be held, if possible, by mutual arrangement, with a little time intervening. Both points are accentuated by the programmes for the three meetings. Growth of intercommunication is instanced by the arrangements that have been made, in response to the invitation of the German Association, for a number of the members of the Institution of Gas Engineers to visit Berlin; by the fact that a minimum party of forty members of the Société Technique will be (at the close of their meeting) fraternizing with British gas engineers at the Franco-British Exhibition and elsewhere for two or three days at the end of June; and by the fact that of half-a-dozen papers that are to be read at the Institution meeting in London, two of them are by friends whose professional careers have been shaped abroad—viz., Mr. A. F. P. Hayman, of Berlin, and Mr. J. O. V. Irminger, of Copenhagen. The fact that these gentlemen are coming to London to read their papers just when the German Association will be holding an important meeting in Berlin, the programme for which is packed with high-class technical matters and interesting visits, places their British *confrères* under a considerable debt of gratitude to them.

Between June 16, when the British and German Associations commence their sittings, and June 26, which will mark the close of the sittings of the Société Technique (and leave members free for the visit to London on the 28th), there will, it is safe to say, be a perfect *débâcle* of technical gas matter, though its ultimate extent is not yet known. The complete programme of the French Society has not been published; but that of the German Association was issued a week since, while that for the Institution is now, we expect, in the hands of members. From time to time, the arrangements for the meeting of the Institution in London—at the Institution of Mechanical Engineers, and at the Franco-British Exhibition—together with the alternative visits to Berlin and Brighton at the end of the week, have been brought to notice through our columns; but the technical part of the programme has been somewhat delayed. Central features, of course, will be the Inaugural Address of the popular President (Mr. W. Doig Gibb, M.Inst.C.E.), and the lecture by Dr. W. A. Bone, F.R.S., on "The Combustion and Thermal Decomposition of Hydrocarbons." Turning for the moment from the individual programme to the collective information before us for the three meetings (so far as it has been published in the case of the Société Technique), the great prominence that is to be given to the question of carbonization, particularly in vertical retorts, is notable though not remarkable, in view of the restless work and encouraging results and fresh knowledge that have been unfolded. To Mr. A. F. P. Hayman hearty welcome will be accorded in London when he comes forward to tell of the latest experiences with Dessau vertical retorts—presumably in Berlin; and at length, Mr. Harold W. Woodall has arrived at the conclusion that his experiences and improvements justify him in submitting the process of continuous carbonization in vertical retorts (with which he is associated with Mr. Duckham) to the criticism of his colleagues. If we turn to the German programme (p. 491), it will be seen that Mr. E. Körting is going to devote himself to a description of the latest developments of retort-settings; while we are glad to see that Herr A. Weiss, of Zurich fame, will once more be on the platform—this time to narrate his personal experiences of vertical retorts. But vertical retorts are not to have absolute possession of the carbonizing field, for Herr H. Ries is again to give information on the Munich carbonizing chambers. When formerly he brought his results before the Association, they were not so attractive as could be desired, in contrast with the best class horizontal and inclined working and with vertical retort operation. But it has been rumoured that some decided improvement has been registered; and therefore his further experiences will command much attention. Then at the "Séance de Discussions" of the Société Technique, vertical retorts, duration of carbonization, and the importance of the weight of charges are among the subjects—and they are all of current importance and interest—entered for debate. Inspection of the vertical retort-settings in Berlin constitutes the magnet for members of the Institution of Gas Engineers. Thus it will be seen that carbonization will in June again be projected largely into the realms of controversy.

Returning to the papers for the Institution meeting, Mr. J. O. V. Irminger will describe the new gas-works at Valby, Copenhagen; and Mr. F. J. Bywater will make his *début* as a reader of papers before the central Institution with one on refractory material. The work he has done in connection with the Midland Junior Association has been marked, and will ensure for him in London a very cordial reception. Mr. Edward Allen will transfer consideration from engineering to chemical subject-matter, with a paper dealing with the extraction of cyanides and manufacture of yellow prussiate by the Davis-Neill process, at Linacre (Liverpool) gas-works. Towards the close of last year, Sir George Livesey submitted co-partnership to the criticism of the members of the Southern Association. So well pleased was he with the discussion, and the fillip it gave to interest in, and agreement with, the cause he has so largely at heart, that he is now prepared to face the free criticism by the larger Institution of his completed scheme for co-ordinating the interests of capital and labour. The half-a-dozen papers we have mentioned, with the President's Address and Dr. Bone's lecture, will give a varied programme, which, with the Franco-British Exhibition, the reception and dance at the invitation of the President and Mrs. Gibb, and the visits to Berlin and to Brighton will abundantly fill the week.

The programme of papers and technical reports for the German meeting is a rich one, as will be seen by the translation elsewhere. We will not refer to the contributions individually, but must compliment the Association on the attractiveness of the list of papers and authors, and express the hope that the realization will be equal to the pleasurable anticipation which it incites. Several of the papers, we feel confident, will be awaited on this side with more than ordinary interest.

To Economize Artificial Light.

THIS is an age of revolutionary ideas and action; and among the newest of the ideas to revolutionize ancient circumstance and custom is one that is found concentrated in the Bill now under consideration by a Select Committee of the House of Commons, with Sir E. A. Sassoon as Chairman. It is a measure designed to promote the earlier use of daylight in certain months of the year, and to economize in those same months the use of artificial illuminants. The Bill was presented to the House by Mr. R. Pearce, M.P.; and it embodies the views of Mr. William Willett, the author of a pamphlet on "The Waste of Daylight." It is proposed in the Bill that the hour between two and three o'clock in the morning of each of the first four Sundays in April shall be a small hour, consisting of forty minutes only; while the same hour in four Sundays in September is to be reckoned as eighty minutes, to bring us back to the original time during the winter months. It needs little reflection to show one that, if this proposal passes, and the hours of active life and commercial and industrial occupation are changed either in

accordance with the proposition or in some alternative way, it will bring in its train serious loss to those engaged in the production and sale of artificial illuminants, which will not find monetary counterbalance in the advantages from the economic, social, health, and general industrial points of view. Perhaps we shall hear more on this head when (as is announced will be the case) Sir George Livesey appears before the Select Committee.

The subject is receiving very serious consideration; and, in these days, it is no use dismissing a matter of this kind as a wild-cat scheme that can never pass. Such schemes do pass in these days; and when a proposal is backed by men of such eminence as those who have appeared, and will yet appear, before the Daylight Saving Bill Committee, there is the more reason to treat it with respect and gravity. Men who rank high as scientists and sociologists, and in the railway, banking, and commercial world, have given the scheme their personal support before the Committee; and very little has yet been said in opposition, except on points of detail and as to the mode proposed of effecting the change in the summer months. There is, in fact, a chorus of approval among those who have so far tendered evidence, with only here and there a jarring note. That is the general impression to be gathered from the evidence. The difficulties and confusion that will be caused by the change are regarded as merely ephemeral, and infinitesimal contrasted with the savings and benefits. The greater use of daylight will (so it is held) be productive of health and pleasure. Men, it is also maintained, who start their daily employment early, and leave off early, are greater and better producers than those who start late, and have at the end of the day to labour under any artificial light; and for them there will be an expansion of opportunities for leisure and healthful recreation during the hours of natural light. It is all up to this point very persuasive; but it is a safe thing to hear both sides before forming any conclusive opinion. On the question of the means, however, of carrying the change into effect, there are very divergent views. The four weekly alterations of time in April and September mean eight changes in a year; and Sir David Gill, formerly His Majesty's Astronomer at the Cape, from his experience of the confusion caused by the single change of only an hour that was made there in 1903, sketched before the Committee a dismal picture as to the confusion that would be created by eight changes in a year. Other witnesses, too, have spoken as to the impracticability of this method of making the change, and have advocated one perpetual change. Here, again, we have an astronomer —Sir Robert Ball, Professor of Astronomy at Cambridge— advancing the most cogent objection; and it is that people will resent having to use artificial light at both ends of a day for (in the morning) a longer period and greater number of hours than is necessary now in the depth of winter.

This brings us to the question of economy in artificial illumination. Mr. Willett, the author of the present scheme, calculates that the saving to the nation by the reduced use of artificial light would amount to at least £2,500,000 a year, and that married working men by the saving in expenditure on artificial lighting would in the summer in effect add at least 1s. a week to their wages by the economy. This, of course, is a purely hypothetical calculation; but it is the only one that we have aggregating the savings through the scheme in artificial illumination. There is no information as to how Mr. Willett arrived at this total sum, nor how it is divided between gas, electricity, and oil. But another calculation has been put forward by Mr. J. H. Vickery, assistant to Sir C. Owens, the General Manager of the London and South-Western Railway Company, to the effect that the Company would save by the change, in the lighting of stations and carriages, in round figures, £3000 a year, and that the railway companies of Great Britain together would be in pocket to the amount of £92,000 by the saving effected in the same direction. This is a substantial loss from one source of revenue alone for the vendors of the agents for artificial illumination. But, speaking generally regarding the whole of the sources of lighting revenue for the gas, electricity, and oil industries, the loss of the first year would represent the maximum loss, on present business, that would recur year by year. But future expansions of business in lighting would be on a reduced scale, again comparing with present conditions. When the change in time was effected in South Africa in 1903, the Manager of the South African Lighting Association stated in one of his reports that the alteration of an hour in the time at Port Elizabeth, had meant a great loss in the consumption of gas; and 1903 was, so far as the Secretary (Mr. William Cash remembers, the first in which a decrease was recorded in the consumption of gas. What happened in South Africa in 1903 would be repeated here by the greater change to eighty minutes in time; but the loss to the lighting industries would, of course, be the gain of the consumers. There is no doubt, too, that, in proportion to the business done, the loss would be felt more by the electricity industry than by the gas, as lighting is the substance of the business of the former at remunerative rates, while a considerable part of the output of gas in the summer time is for cooking and industrial purposes. The effect, too, in connection with lighting would be more in the domestic business than in any other direction, as in the summer the use of gas for lighting in industrial establishments is already, owing to the hours of employment, somewhat of an inconsequential order. If, however, a change was made once and for all, it is possible that the greater consumption of gas for lighting in the mornings between October and March would produce some compensation for the summer loss, and the winter evening loss. At the same time, a loss in summer, when already the minimum business is being done, and when a considerable portion of the capital invested in works and plant is lying idle, is not a condition of things to raise any particular feelings of thankfulness from our industrial standpoint, apart from the views we may personally entertain from the social standpoint.

Rational Management of Public Lighting.

The large extent to which municipalities have entered into trading has created an altogether new condition of affairs in local polity; and a condition of affairs under which the interests of the ratepayers are not now considered and determined with a mind free from bias. Time was when no contract, where it could be put up to competition, would have been made without, if its value exceeded £50. But this particular protection of the ratepayers and safeguard of purity in local government, as provided for in the Public Health Act, 1875, has been completely undermined by local authorities themselves entering into trading in competition with private enterprise conducted under rigorous limitations laid down by Parliament. It is clear that general legislation applying to local administration has not kept pace with the evolutions of time; and amendment is urgently required to give the same protection to ratepayers that they possessed before municipal trading became so rife. Such amendment could not at any rate place private gas enterprise in a worse position in its competition for public lighting contracts than it is in at present, when, as soon as a gas contract is ended, and it is convenient for a Council trammelled with a needy electricity concern to do so, the public are constituted larger customers of the undertaking, without eliciting whether or not they are willing, or without (in cases) ascertaining whether the local Gas Company would not be prepared to do the work cheaper than the electricity undertaking.

As an abstract proposition, without considering the effects, it may be submitted that the municipal electricity undertaking is an interest of the ratepayers; and therefore all that can be done to ensure the prosperity of the undertaking is to the advantage of ratepayers. *Primâ facie*, this may appear to be so. But those who are not content with superficial appearances find the specious contention rotten to the very core. It is not beyond the scope of imagination to frame a condition of affairs in which so-called "interests" of the ratepayers could be extended to such a length that the mismanagement of the trading undertakings, their bolstering-up from the rates, and the neglect of the legitimate interests of local government, would, in fact, mean utter ruin. Look to the magnitude of the poundage of rates to-day in many a town; look to the amount to which municipal trading undertakings are a burden upon the rates in certain towns; look to the increased charge of (for example) the public lighting on the rates; view these urban financial conditions from the standpoint of the prosperity and well-being of the towns— and then give unprejudiced judgment as to whether there is any increase in prosperity and well-being of the community generally to justify it all. We will not, however, on this occasion discuss the question in its broad and multiplex aspects; but will confine ourselves to one or two phases of it, especially concerning public lighting, which demand grave consideration.

Time was when there were no competitors with gas in public lighting, other than wasteful, inefficient, and labour-creating oil-lamps. Then the local authority entered into

contracts with the gas suppliers for the service—whether the suppliers were a company or one of their own municipal departments—making the best bargain possible, and seeing that there was due and true compliance with the terms of the contract. Things have changed. Now, in those towns where what was practically a monopoly for gas has been converted into an open market through the establishment of an electric lighting company, the public lighting can be, and is, in streets where the electricity cables are laid, thrown open to competition, just in the same manner as the custom of a single private resident. Of this, where disinterestedness prevails in the local counsels, the gas company have no cause, and we will go further and say have no right, to complain; nor have they any fear under such circumstances. A fair field and no favour, and they are prepared to face the keenest contest with the competitor. But that is not generally the position of affairs—there are exceptions—where the electric light undertaking is a municipal venture. There competition is ignored; the principles of the Public Health Act underlying municipal contracts are set at naught; and the true interests of the ratepayers are thickly covered by plausibility and superficiality.

It is serious for gas companies; and the question is where it is all going to end. In the search for further business by the municipal electricity undertakings, capital is sunk in cables in roads indiscriminately, and in roads where the prospect of obtaining remunerative private business on the capital is but nebulous. To obtain some return, arc lamps are erected for the lighting, and illumination is obtained beyond what is necessary; and the cost of lighting the thoroughfares is increased by (say) fivefold or sixfold, which additional cost persists year after year. Or in other cases, heavy capital expenditure is incurred in altering from incandescent gas lighting to incandescent electric lighting. The amount of illumination is lowered; and the annual total cost of the service, if all the charges—capital, running, and maintenance—are taken into account, is considerably raised. And this it is held is in the "interests" of the ratepayers. Having been saddled with an electric lighting undertaking by perhaps a number of tradesmen who are also local councillors, and have a fancy for electric lighting for their shops, the attitude is taken that it is to the "interests" of the ratepayers to support—without consideration of cost and efficiency—the electric light undertaking. Never until municipal trading became the vogue, through the policy misnamed Progressivism, did such insidious principles animate our local rulers. Only the other week, the Police and Sanitary Committee of the House of Commons told the Blackburn Corporation that their gas and electric light undertakings should be regarded and treated as being independent concerns under independent management, equally as though they were in the possession of separate sets of private persons. That, in our opinion is how any public service such as that of street lighting should be regarded and treated. The street lighting should be kept entirely independent of the municipal electric lighting undertaking; and the latter should be made to compete, and no favour be extended to it, precisely as though it was under external management. Only in this way can the original legitimate functions of a local authority be faithfully carried out; and only in this way can the true interests of the ratepayers be served and defended. We should like to see this particular matter seriously argued from the contrary standpoint.

We have strong feelings on this question of a definite independence of the public lighting and the municipal electricity undertaking, and are therefore quite willing to concede the application of the rule to the few places where the public lighting is controlled by the municipal gas committee. We would urge, too, that where the gas supply is not a municipal undertaking, the public lighting should be controlled by a committee upon which there should be no members who are engaged in the management of the electricity undertaking; but where both gas and electricity undertakings are under the control of the local authorities, then the public lighting should be in the hands of an independent committee, with a representative upon it of both the gas and electricity undertakings, but not representatives so that voting could be influenced in one way or the other. Unfortunately, however, in certain towns, the public lighting has been entrusted to the committee having charge of the municipal electricity undertaking. Public lighting is not a function of the administration of an electricity undertaking. It is a local and public service, embracing financial considerations altogether distinct from the management of the electricity undertaking as a trading venture, which venture should succeed or fall on its own merits, just in the same way that an unaided private enterprise must do. Under such conditions of dual management of interests that stand in the relation of customer and seller, prejudice and unfairness—to the detriment of competing sellers, and to the detriment of those who have to meet the liabilities of the public lighting—must creep in and become enlarged with time. The disagreeable aspects of the question are not confined to those of a financial order. Where the control of the public lighting is in the hands of the electricity committee, it is found that there is more fuss over one extinguished gas-lamp during lighting hours, than over the failure of a whole series of electric lamps on one or more circuits.

Some local authorities have (to their credit be it said) kept the management of the public lighting altogether separate from the electricity committee. But a sorry spectacle in vacillation is presented to-day by the Tunbridge Wells Town Council. There, in the absence of the Chairman of the Committee having the control of the public lighting and the electricity undertaking, the public lighting was confided to an independent committee. At the behest of the incensed Chairman, the Town Council have reversed their decision; and the public lighting has been restored to the Electricity Committee. The reversal supplies a study in municipal littleness and unstable convictions; and the future movements of the Council in connection with the public lighting will therefore have to be very keenly scrutinized. Such dual control is inconsistent with administration that is above suspicion. The plea that there are no bias and no interest on the part of an Electricity Committee has no conspicuous congruity with the ardent desire to retain possession of the management of the public lighting. Another inconsistency may be pointed out. Gas shareholders who are members of a Town Council, it is generally accepted, are prohibited from voting on local matters in which they, by virtue of their position as shareholders, have any pecuniary interest; but, while one side of the scale is lightened by their abstention from voting, the whole weight of the Electricity Committee can be thrown into the other side to carry their public lighting plans. Absolute independence of the public lighting from electricity committees is what we justly ask for; and not until such independence is secured can it be said that there is disinterested and rational management of the important public lighting service.

Municipal Trading Profits and the Rates.

THERE are indications that, in municipal circles, the doctrine of rate relief from municipal trading undertakings is falling in esteem; but there is much more work to be done before the converts will form a sufficient majority to sweep the defenders of the ancient and uneconomic custom before them. At Manchester there has been agitation lately against a proposal on the part of the Finance Committee, on account of the additional claims of spending committees, to increase the rates. There have been murmurings and grumblings, deputations to the Lord Mayor (Alderman Edward Holt), letters to the local papers, and discordant speeches in the City Council Chamber; and the outcome is that the proposed increase in the rates has been referred back to the Finance Committee, with an instruction to whittle down the demands of the spending committees, so that there shall be no increase. The citizens are sickening of heavy rates, and, concurrently, of huge profit-drafts from trading departments for the "relief" of the rates, which cause the price of the commodities municipally supplied to be much heavier than they would be otherwise. In twenty years in Manchester, the rates have risen from 4s. 6d. to 7s. 6d. in the pound; in those twenty years, thousands and thousands of pounds have been annually contributed (more now than in the early part of the period) to the "relief" of the rates from the Gas Department and the Tramways Department, and the Electricity Committee are now again being laid under contribution, but only to the extent of one-fifth part that transferred from the Gas Department. Manchester has still a dirty and smoke-laden atmosphere! The purblind municipal extremists still want their profit contributions from the trading undertakings; and some of them would increase them if it were possible. Despite the teachings and the preachings of Mr. Alderman Gibson, the Chairman of the Gas Committee, they will not see that dirt and smoke are the perpetual claimants for expenditure to remove the mischief wrought by their evil presence, and that the considerably cheaper gas that could be supplied if

£50,000 of profits were not annually taken from the department (made up this year by a much-to-be-deplored appropriation from the department's reserves) would largely obviate that outlay.

The old policy of dipping into trading profits has not, as seen, stopped in Manchester the upward bound of the rates, nor has it stopped dirt and smoke; and therefore a new policy should be introduced for trial. Mr. Howarth, the Chairman of the Electricity Committee, is of this belief. How long he has been so, we do not know. But anyway his department is to be drawn upon for £10,000; and he and Alderman Gibson are now in the same boat! We are glad to see it. Our resistance to profit appropriation for rate relief cannot apply to one department and not to another; and by incremental additions of adherents to the cause, a majority in the Manchester and other local Councils may be reached, who will refuse to longer be parties to causing an unequal incidence of the financial obligations of the city by extracting profits from the consumers of gas and electricity. The former are, and have long been, in the worse position. They have for many and many a long year paid standing charges and interest on capital, supplied the undertaking with the money to pay its rates, maintained and renewed works and plant, and then have had taken from them money which should have gone to lighten their expenditure for gas. The use of gas as a fuel and for motive power would have got farther along the road had a wiser policy prevailed. The policy of the past and present is a wrong one; it is an infraction of economic laws, a bar to the municipal commodity being of the greatest service to the community, and an unintelligent perpetuation of a great obstacle to the reduction of the smoke and dirt nuisance. To misappropriate and to mismanage is to betray trust and interests; and so long as profit appropriations from municipal trading enterprises continue, so long will such betrayal continue. We hope to see a great enlargement of the enlightenment in this matter that appears to us to be now rising well above the horizon.

Labour Co-Partnership.

Several interesting points were touched upon by Mr. D. J. Shackleton, M.P., in the course of the address which he delivered when presiding over the half-yearly meeting of the Labour Co-Partnership Association at Leicester recently; and the members also listened to, and discussed, a paper by Mr. Henry Vivian, M.P., on "Co-Partnership and the Problem of Unemployment." The address and the paper were, of course, nearly allied; but they dealt with somewhat different aspects of the labour question. Mr. Shackleton devoted considerable attention to the methods of settling industrial disputes—a question the importance of which is being emphasized at the present time by the strike and subsequent lock-out in the shipbuilding trade which has demoralized business in the North of England. It may well be, as he said, that the representatives of labour are greatly handicapped under present conditions in treating with employers on behalf of their men, by the fact that the employers have a better insight into the possibilities of the trade than have those who are acting on behalf of the men; but at the same time it must be remembered that the employers, too, labour under a disadvantage in negotiations with the labour leaders, inasmuch as there is (as events have more than once proved) no absolute guarantee that the men will be content to follow the advice, or requests, that may be tendered to them by their own representatives. As a matter of fact, this much is apparently admitted by Mr. Shackleton himself; for, after confessing that he was surprised more employers had not tried the system of profit-sharing, and saying that so long as the men were not fettered with regard to their Trade Union principles he saw no objection to the system, he pointed out that in carrying on their co-partnership movement it was imperative that it should not lead to laxity in discipline. They had, he said, an illustration of what he meant in the engineering dispute then proceeding on the North-east coast; and what was wanted in that trade was discipline. Collective bargaining meant that the men should select competent officials and representative men who had a wide view, and who should settle these matters on their behalf. He could see failure for Trade Unionism if men insisted on the democracy going mad on these occasions. Certainly if negotiations between employers and representatives of the employed are to be productive of real good, power to act must be given to both parties, and there must be ground for absolute confidence that any decisions arrived at will be duly respected. The argument to which Mr. Vivian addressed himself in his paper was that the question of unemployment (so far as it is caused normally—that is, by fluctuations in trade) might be met by the raising of a fund during good times, partly from the profits of the employers and partly from the wages of the employed, so as to keep the men from want during periods of enforced idleness. How far such a proposal would commend itself remains to be seen; but, at any rate, it would not seem to be a less promising solution than the shortening of the hours of labour, which is now so loudly advocated in certain quarters.

A Good Year at Birmingham.

The report and accounts of the Birmingham Corporation Gas Department for the past financial year—the former of which was referred to in last week's issue of the "JOURNAL," while the latter are briefly noticed in our news columns to-day—indicate a gratifying position of affairs for all concerned. There is a surplus profit of £61,313, which is about £4000 more than was realized the previous year, which, in turn, showed a gain of £3000 upon the twelve months before that. In these three years the price of gas has remained at the same figures—viz., 1s. 7d. to 2s. 6d. per 1000 cubic feet, less 5 per cent. discount for prompt payment—but the average net price has varied a little; having been 2s. 0·99d. per 1000 feet in 1905-6, 2s. 0·5d. in 1906-7, and 2s. 0·55d. in 1907-8. The gas-rental last year was £720,323, as compared with £687,229 and £683,530 in the two preceding years. This indicates a larger increase in the quantity of gas sold last year than was experienced in the twelve months before that. As a matter of fact, the amount of gas sold and used on the works for the three years was as follows: 1905-6, 6,565,642,500 cubic feet; 1906-7, 6,730,476,200 feet; and 1907-8, 7,042,025,400 feet. The result of this large additional output (and, it must not be forgotten, of the excellent prices obtained for the residuals) is that the sum to be handed over to the improvement rate on the present occasion—£61,313—is larger than the contribution of any previous year since the works were acquired by the Corporation. The amount paid over to the rates in 1906-7 was £57,563, and in 1905-6 £54,546. The enormous extent of the business done is shown by the fact that the total receipts last year were no less than £980,089 (which was an increase of nearly £80,000 over the preceding twelve months), while the balance carried to the profit and loss account was practically £180,000. It must be a gratification to Mr. Hack that his last year in the position of Chief Engineer has been such a strikingly successful one for the undertaking.

More Money Wanted.

It is clear that the appeals for money for those little and feeble gas undertakings around whose promotions hang circumstances which do not meet with our approval, are receiving smaller and smaller response from the public. People are finding them out more and more, and are getting more wary; and the campaign against such promotions at gas shareholders' meetings and through the Press cannot fail to produce some effect. While prospectuses from such concerns continue to be issued (it is easy to distinguish them by those who have followed up this opprobrious promoting eruption in the gas industry), we shall not lessen our efforts to expose them. In our issue for May 12, comment was made on an appeal for further capital by the atrociously over-capitalized New Toddington and District Gas Company; and Mr. H. E. Jones had some caustic remarks on the same subject in our "Correspondence" columns last week. Now the Company have issued a fresh prospectus, printed in black and red ink. The former appeal of the Directors for tenders for twenty first mortgage 4½ per cent. "A" debentures of £100 each evidently missed fire, notwithstanding seductive terms and statements; and we are glad of it. It was then said that "no further first 'A' debentures, above this £2000, can be issued without the consent of the whole of the debenture holders." Now the Directors announce a willingness to receive applications for 200 first mortgage debentures of £10 each, which shows that either the £100 debentures were a bit too heavy, or that the public want nothing more to do with this "old established undertaking in good working order, and revenue earning," but with a capital already too heavy for such a liliputian concern to carry. But that is not all. The Directors are anxious to smartly rake in all they can. There is also on offer now 600 preference shares of £5 each, ranking

for dividends out of the "profits" of the Company. Lower down in the prospectus it is remarked that "the *receipts* from the gas undertaking are more than sufficient to meet the annual debenture interest on this issue." Applicants for preference shares, Beware! The Directors want to handle the money quickly. The applications are to be in not later than May 29; the balance of payments by applicants for the debentures is to be by June 8; and payments for preference shares are all to be cleared up by June 30. Quick work! For other things, that we might say here about the Company and this further invitation to the public, see "JOURNAL" for May 12, p. 346, and May 19, p. 444.

Canadian Progress.

Some indication of the enormous strides that are being made by Canada as a manufacturing country can be gathered from an Ottawa Blue-Book on the subject which has been lately compiled and issued under the direction of the Hon. Sydney Fisher, Minister of Agriculture. The statistics, which relate to the year 1905, were taken during 1906; the method adopted of securing the information being by inquiry through the post—the result of which proved generally satisfactory. The particulars sought had reference to the description and location of the works, the capital employed, the number of employees, their salaries or wages, and the class and value of the products. The last occasion on which such information was secured was in connection with the census of 1901 (relating to the year 1900); and though the limiting on that occasion of the inquiry to establishments having five employees or over prevents the two sets of figures being strictly comparable, this trouble has been met by working out the results of the present investigation with the deduction of the figures relating to these small works. It may be mentioned that Ontario and Quebec, as indicated by the value of the capital employed in 1905, absorb more than three-fourths of the manufacturing activities of Canada. In 1900 the capital employed in manufacturing operations in Canada was $446,916,487; while in 1905 it was $833,916,155, or an increase of about 86 per cent. The value of products in Canada for all establishments in 1905 was $718,352,603; and of this 51·21 per cent. was contributed by the province of Ontario, and 30·61 per cent. by Quebec. In that year, the labour bill for all establishments in Canada represented 22·98 per cent. of the total value of the products. In the five years, the western provinces have increased their manufacturing output in a much larger proportion than those of eastern Canada. Manitoba has more than doubled, and British Columbia has nearly doubled, the value of its products since 1900. In the east, Ontario has increased the value of its products by all but 50 per cent., which, says the report, "in view of the fact that the value of the total products of this province is more than half that of the whole of Canada, indicates very gratifying progress." Coming to particular businesses, it is to be noted that under the heading of "Gas Lighting and Heating," the value of the products of 39 establishments (with 969 employees) was, in 1905, $2,193,996. The next item, "Gas Machines," was responsible for eight establishments, with 79 employees, and a value of products of $97,869. There were 157 "Electric Light and Power" establishments, with 2435 employees; the value of the products being $7,587,899. For all establishments, the total number of industrial employees in 1905 was 392,530; and the average of salaries and wages per person was $421. The salaries and wages vary in different parts; the highest figure per employee being $572 in Manitoba. However, the value of a wage consists, of course, more in its purchasing power than in its amount, so that wages in one place can hardly be compared with those in another which may be totally differently situated in this respect. What the return does clearly show is that Canada is "going ahead"—a fact on which the Mother Country will be the first to congratulate her.

Manchester District Institution of Gas Engineers.—The 153rd quarterly meeting will be held at Bradford next Saturday. The morning will be occupied by a visit to the Frizinghall Chemical Works of the Bradford Corporation Gas Department, which are under the control of Mr. Shepherd. After luncheon, the business meeting will take place under the presidency of Mr. T. Duxbury, of Oldham, when there will be a discussion on the paper contributed by Mr. Thomas Newbigging on "Incandescent Gas Lighting" read at the February meeting, followed by the reading of the paper by Mr. E. Frith, of Runcorn, on "The Construction and Costs of a Concrete Gasholder Tank."

NOTES FROM WESTMINSTER.

FRIDAY last saw a break in the barrenness in gas of the opposed Private Bill legislation; and it was the Draycott Company's Bill, opposed by the Long Eaton Gas Company, that gave the relief. Otherwise, proceedings in the rooms just lately in which we find modest interest this session have been entirely in the water line, excepting perhaps the Electricity Bills for London, which are noticed this week in "Electricity Supply Memoranda." One little point in connection with the London and District Electricity Supply Bill was gained by the South Essex Water Company. Their Counsel, Mr. Macassey, raised the question as to possible injury to their wells and mains by the proposals in the Bill; and Mr. Talbot, K.C., undertook to insert a clause which should protect them from interference with their sources of supply. Certain Bills that it was rather expected to see opposed in the Second House are evading the experience. The Rhymney and Aber Valleys Gas and Water Bill was among the threatened; but penalty clauses for not executing work within a time-limit or for supplying unfiltered water have been agreed to. The maximum price of gas is also to be fixed at 4s. 9d. per 1000 cubic feet—the present limit being 5s. 6d. The Llanelly Council have also on terms withdrawn their opposition to the Gas Company's Bill.

Long Eaton again Defeated. Once more the Draycott Gas Company have met the Long Eaton Gas Company—this time in the House of Lords; and we are glad there was no sign of compromise on the part of the former. We have had the same Counsel and the same witnesses as when the Bill of the smaller Company was before Mr. Whitbread's Committee in the Lower House in March last. The Long Eaton Company, very naturally, did not like the decision of the House of Commons Committee. No one would have felt particularly comfortable under such a snubbing as the Committee gave the Company. But they had only one more chance of opposing the Draycott Company's request that Parliament should, in effect, order the Long Eaton Company to leave them in peaceful possession of a district in which both had concurrent powers of supply, but in which there had not been concurrent operation. The whole story is well known of how Long Eaton stood aloof from the disputed district while the Draycott people did the spade-work, of how they only recently came in to enjoy the fruits of the labour of the smaller Company, and of how they tried to beat them by supplying gas in this out-district at a much lower price than they could supply at in Long Eaton itself. "Scandalous and disgraceful" were the descriptive terms applied by Mr. Corbet Woodall to this unfair system of competition; and there is no doubt whatever about their fitness. Sir George Livesey, Mr. Woodall, and Mr. Charles Hunt, together with the Chairman of the Draycott Company (Mr. J. N. Darbyshire) were among the witnesses on Friday. The opposition was commenced by Mr. Balfour Browne, K.C., the same day. But it was palpable the fighting spirit on the Long Eaton side had been much subdued by their crushing defeat in the Lower House; and the twisting that their witnesses had from Mr. Honoratus Lloyd, K.C., in cross-examination was not a pleasant recollection. The proceedings were continued yesterday, when further evidence was given for the Long Eaton Company. But it did not satisfy their Lordships. As we hoped would be the case, Long Eaton were again defeated; and so the position taken up by the Draycott Company has been justified by both Houses of Parliament. The only point to be noted is that, if the Draycott Company do not purchase the pipes of Long Eaton *in situ*, then there are conditions attached to the decision as to the payment for their removal. But with this intimation of the result, the matter must (owing to time pressure) be left for a week.

Water Schemes in Committee. There has been since Parliament reassembled after the Easter recess, a tremendous batch of Corporation Bills, incorporating water provisions, before various Committees of the two Houses. The Police and Sanitary Committee have had the Burnley measure under consideration. It proposes a reservoir in the Hurstwood Valley (between the existing Cant Clough and Swinden reservoirs), with a capacity of 300 million gallons, together with an intake from the Shedden Valley. The scheme is estimated to cost £225,000; and, as arrangements were come to with the various petitioners against the project, it was allowed to proceed. A House of Lords Committee have had the Keighley Corporation Bill before them. Years ago, the Corporation obtained powers to construct what is known as the lower-level water scheme; but from various causes the construction has been delayed, and Parliament has from time to time extended the period within which construction was to start. The Corporation do not wish to lose their powers; and again an extension of time is sought. The Committee have agreed to allow this; but the works are now to be substantially commenced within two years, and completed within ten years. Authorization was also given to land purchase in connection with the undertaking. The Liverpool Bill has also been before the Police and Sanitary Committee. In it, the Corporation seek to cancel the obligations they are under to afford a supply of water if required to St. Helens, Warrington, and Widnes, if these authorities do not demand and take a supply of water within three years from Jan. 1 last. The three authorities are in opposition; and the proceedings will be resumed this morning. Not long since, we commented upon the Lincoln Corporation Bill, after it came

before, and was passed by, a House of Commons Committee. Now it has been before a House of Lords Committee, and was passed by them. There is nothing fresh to say in regard to the measure. It proposes to secure for Lincoln a supply of water from Elkesley, near Retford; and the Nottingham County Council, the East Retford Corporation, Mansfield, and other towns were strongly opposed to Lincoln drawing upon Nottinghamshire water. The opposition was not so great on this occasion as in the last House; but it was equally powerful and determined. When this is said, nothing more remains to be advanced; for witnesses and evidence merely formed a second edition of the original. The Lords Committee appeared to be satisfied that at present, and for years to come, the pebble beds of North Nottinghamshire will be able to supply the local requirements, and also furnish 3 million gallons a day to Lincoln of better water than the city could obtain elsewhere. Through all the critical stages of both Houses, the Skegness Bill has now passed. It contemplates the purchase by the local authority of the water undertaking by agreement. The maximum costs, including £2000 expenses of the Act, will be about £42,000. The period of repayment is fixed at 45 years. In the House of Lords, a Committee presided over by Lord Newton, have the Monmouthshire County Council Water Bill under consideration; and in the Lower House, the Pontypridd Water Bill has been under discussion. These will be noticed in an early issue.

GAS STOCK AND SHARE MARKET.

(For Stock and Share List, see p. 516.)

THE week just closed on the Stock Exchange has been a fair one on the whole, but not altogether free from oscillations and fluctuations, which acted sharply at times. The continuing favourable factor was the condition of money, which is persistently cheap as a fact, whatever the nominal Bank rate may be. But a more uncertain factor, and one which wields a very powerful influence nowadays, is the American Market, which at times seems quite to dominate all the rest. The opening on Monday was calm, and pretty well every department was in good form, with prices on the rise. The next day saw markets ruling firm in general, except the gilt-edged division, where Consols fell ⅛. On Wednesday, Consols had a similar fall, and some of the rest were not as steady as on Tuesday. On Thursday, Consols jumped up ⅜; but there was a good deal of irregularity in other quarters where business became more active. Friday was quieter, with the usual profit-snatching on a small scale; but prices generally held on pretty well. The weakest point was in Home Railways; and Americans were a little shaky. Things took the same line on Saturday; Home Rails being very timid in regard to threatenings of labour troubles, and the American Market being decidedly flat. In the Money Market, a better demand for short loans set in, and money could be more profitably employed; but this position eased away before the close. Discount rates were easy throughout. Business in the Gas Market was fairly up to the average on the whole, though some days were disproportionately quiet. The course of prices was certainly not so good as that of the past few weeks, and changes of quotation, though very few and very slight, are almost all for the worse. It is difficult to assign any reason for this, but things do happen so sometimes. In Gaslight and Coke issues, the ordinary opened at the old figures, and was done several times at 95. But on Friday and Saturday it became rather easier, and closed with a mark of 94—a fall of ½ in the quotation. The secured issues were unchanged; the maximum being done at 89, the preference at from 107½ to 108½, and the debentures at 84 free. South Metropolitan was rather quiet and unchanged, with dealings at from 118½ to 119½, the same as the week before. In Commercials, the 4 per cent. changed hands at from 106½ to 108; the 3½ per cent. at 102 free; and the debenture at from 83⅜ to 84. In the Suburban and Provincial group, Alliance and Dublin old was marked at from 18¾ to 19 9/16 (a rise of ½), ditto debenture at 100½, British at 42½, Brighton original at 205, ditto "A" at 155¼ and 156, South Suburban at 117, Wandsworth at from 129½ to 130½, and West Ham at from 100¾ to 101½. In the Continental Companies, Imperial changed hands at from 175½ to 177, Union at from 116 to 118, and European fully-paid at 23 7/16 and 23 free. Among the undertakings of the remoter world, Buenos Ayres was done at from 10⅞ to 11 3/16, Melbourne 5 per cent. at 100¾, Monte Video at from 11¼ free to 11⅝, Oriental at 14 1/16, Primitiva at 6¼ and 6 5/16, ditto preference at from 4 23/32 to 5, River Plate at from 12⅝ to 13⅛, and San Paulo at 13⅝ and 13¾.

Mr. J. H. Darby, who has retired from the post of Managing-Director of the Brymbo Steel Company, Wrexham, has been presented by the staff and workpeople with an illuminated album and address.

Mr. John Scott, of the Cowdenbeath Gas Company, has been appointed Manager of the Kennoway Gas Company; and Mr. David Small, also of Cowdenbeath, has been appointed Manager of the Largo and Lundin Links Gas-Works. Mr. Small was for two years in the employment of the Broughty Ferry Gas Commissioners. He then went to Cowdenbeath, where he has stayed for six years. Mr. Scott is a son of the Manager of the Cowdenbeath Gas Company.

PERSONAL.

At their meeting on Friday, the Gas Committee of the Bolton Corporation had before them five selected candidates for the position of Superintendent at the Lum Street Gas-Works. There were originally sixty applicants for the post, which is worth £180 per annum. The Committee decided to appoint Mr. W. H. HEALD, Engineer with Messrs. R. Dempster and Sons, of Elland.

The Fylde Water Board are about to consider a scheme for the future development of their works and mains, and the appointment of an Engineer in connection therewith, as was suggested by Mr. W. WEARING, the present Engineer. Mr. Wearing has recently expressed a desire, owing to his health not being as good as formerly, to be relieved of any further duties beyond the completion of the Grizedale Lea new reservoir. He has been associated with the Fylde Water-Works since 1879, when the late Mr. Edward Garlick was appointed Engineer of the Fylde Water-Works Company. On the death of Mr. Garlick (with whom Mr. Wearing had been for upwards of thirty years), Mr. Wearing was appointed, in February, 1900, Engineer to the Fylde Water Board; the undertaking having been transferred from the Fylde Water Company in 1899. The construction of the new storage reservoir above referred to, at Grizedale Lea, to hold 332 million gallons, has been in progress since the summer of 1903. The work and workmen are under the direct control of Mr. Wearing; and the Board desire him before he retires to complete this important undertaking, which he originally designed.

Mr. JAMES TAYLOR, of Oldham, whose appointment as Gas Manager at Mossley has been lately recorded, was on Friday the recipient of pleasing testimony as to the respect in which he is held by those he is about to leave. In the evening, the employees at the Hollinwood Gas-Works met in the dining-room, under the presidency of Mr. Thomas Garlick, for the purpose of making a presentation. Mr. Tim Duxbury, the Gas Engineer of the Corporation, said he regretted they were losing Mr. Taylor; but he was leaving them to better himself, and he had no doubt he would prove a very good man for Mossley. The Gas Committee had passed a resolution congratulating him on his appointment, and expressing the best wishes of the members for his future success. The gift consisted of a timepiece and two handsome side ornaments, which bore the following inscription: "Presented to Mr. James Taylor by the employees of the Hollinwood Gas-Works of the Oldham Corporation as a token of esteem, on his resignation as Manager of the works, May 22, 1908." Mr. Taylor responded, and said he hoped the new Manager would be as well supported by the workpeople as he had been.

OBITUARY.

MR. ROBERT S. CARLOW.

Though, in view of the very precarious state of his health for some time past, the event was not altogether unexpected, the sorrow of his many friends in the gas profession will not be any the less on this account at hearing that Mr. ROBERT S. CARLOW passed away at his residence, No. 1, Glebe Avenue, Stirling, last Saturday morning. Mr. Carlow was for many years previous to 1901 the Manager of the Arbroath Corporation Gas-Works; but he was more widely known among his fellow engineers as Secretary and Treasurer of the North British Association of Gas Managers, a post to which he was elected in 1887, and held nominally at the time of his death. Last year, however, ill-health compelled him to seek early relief from the duties of the office; and at the annual meeting a letter from him was read in which he tendered his resignation of the positions of Secretary and Treasurer, to take effect as from June 30 next; but he expressed his willingness to carry out the arrangements for this year's meeting. In spite, however, of his good will, circumstances proved too strong for him; and the burden of the work for the Association fell upon other shoulders, and Mr. Laurence Hislop, last year's President, has undertaken the duties since Mr. Carlow was laid aside by illness. Ever since last July, Mr. Carlow's health had been very bad; and on Friday night, at 9 o'clock, matters took a decided turn for the worse. The end came, as already remarked, about 7 o'clock the next morning.

The death is announced of Mr. L. L. MACASSEY, M.Inst.C.E., who had for many years been professionally associated, as Consulting Engineer, with the Belfast City and District Water Commissioners, and under whose supervision all the most important extensions of the water-works, including the great Mourne scheme, were carried out. He was consulted in connection with the water supply of a number of places in Ireland; and he also had extensive practice as a railway, harbour, and sanitary engineer, both in England and Scotland. He was called to the English Bar in 1886, becoming a member of the Middle Temple, and had a large practice as a parliamentary barrister. He was the author of "Hints on Water Supply," "The Procedure of Private Bill Legislation," and (in conjunction with Mr. J. A. Strahan) "The Law Relating to Civil Engineers." His eldest son, Mr. Lyndon Macassey, has already achieved some considerable success as a junior counsel at the Parliamentary Bar; and another, Mr. Verner Macassey, was associated with his father in the business of the firm, the manage-

ment of which now devolves upon him. At the last meeting of the Belfast Water Trust, the Chairman (Mr. Samuel Rea) made feeling reference to the loss that they had sustained by the death of Mr. Macassey—a loss which, in view of the importance of his connection with the Trust, he believed would be regretted by every member. He proposed that a sincere vote of condolence with the family of the deceased should be passed; and this was done in silence.

On Saturday, the death took place quite suddenly of Mr. JOHN M'GILCHRIST, who since the beginning of 1906 held the appointment of Manager of the Gourock Corporation Gas-Works, of which he took charge on Mr. J. M'Ewan's death. Deceased, who was only 32 years of age, was the eldest son of the late Mr. James M'Gilchrist, of Dumbarton.

The death is reported, on the 2nd inst., of Herr A. THIEM, the well-known water-works engineer of Leipsic. Deceased, who was a very energetic member of the German Association of Gas and Water Engineers, had attained his 73rd year.

The death occurred on the 4th inst. of Herr G. POLACK, the Manager of the Aërogene Gas Company, of Hanover. The recent expansion in the use of air gas in general, and "Aërogene" gas in particular, in Germany, was almost wholly due to his strenuous advocacy of it.

The death is announced of Mr. WILLIAM WILSON, a gentleman who had been prominently associated for many years past with the direction of some of the leading English companies operating in the River Plate. Mr. Wilson was for more than twenty years a Director of the Monte Video Water-Works Company, Limited.

GERMAN GAS AND WATER ASSOCIATION.

Programme of the Annual General Meeting.

THE forty-eighth annual general meeting of the Association will be held, as already announced, on the 15th to the 19th prox. at Berlin. The President of the Association is Herr J. Nolte, the General Manager of the New Gas Company of Berlin; and the Vice-Presidents are Mr. E. Körting, the General Manager at Berlin of the Imperial Continental Gas Association, and Mr. W. H. Lindley, C.E., of Frankfort-on-the-Maine. Visits to a number of works have been arranged for the morning and afternoon of the opening day, Monday, June 15; among those from which visitors may make their choice being: The compressing plant station for high-pressure gas-lighting of the municipal gas undertaking; the lamp works of Messrs. Ehrich and Graetz; the pumping station at Deutsch-Wilmersdorf; and the central station at Südufer of the Berlin electricity works. In the evening, there will be the customary assembly, with a reception by the President, in the large hall of the Philharmonie, followed by a supper and a concert.

The technical proceedings will occupy the mornings (from 9 to 2 o'clock) of the three following days, and will be held in the Beethoven Hall of the Philharmonie. Papers on gas supply will be taken on the Tuesday, those on water supply on the Wednesday, and the reports of the Technical Committees of the Association, any arrears of papers from the previous days, and private business will be dealt with on the Thursday. Among the papers announced are—

"The Technical Development of the Berlin Gas-Works in the Past Decade," by Herr SCHIMMING, of Berlin, with Supplementary Note by Herr E. MEYER on "The Coal Stores."

"The Public Lighting of Berlin, and in Particular the High-Pressure Lighting," by Professor DREHSCHMIDT.

"Gas as a Preventative of the Smoke Nuisance in Large Towns," by Herr K. HARTMANN, of Berlin.

"Gas Engines *v.* Electro-Motors," by Herr SCHÄFER, of Dessau.

"Preliminary Remarks on the Latest Development of Gas-Making Settings," by Mr. E. KÖRTING, of Berlin.

"Experiences with the Working of Vertical Retorts," by Herr A. Weiss, of Zürich.

"Further Experiences with Settings of Carbonizing Chambers at the Munich Gas-Works," by Herr H. RIES, of Munich, to be followed by other notes and a discussion on coke-ovens, chamber-settings, vertical retorts, &c.

"The Evolution and Present Position of the Water Supply of Berlin," by Herr G. EGGERT, of Berlin.

"Appreciation of Water from the Hygienic Standpoint," by Dr. PROSKAUER, Professor at Charlottenburg.

"The Physico-Chemical Aspect of the Damming of Valleys," by Professor THIESING, of Berlin.

"The Causes of the Breslau Water Calamity," by Herr DEBUSMANN, of Breslau.

"Artesian Well Phenomena in the North German Plain," by Herr E. PRINZ, of Berlin.

"A Projected Prussian Water Law," by Herr O. SMREKER, of Mannheim.

The reports of the Technical Committees to be presented by the respective Chairmen are—

"On Water Statistics and the Operation of Water-Works," by Herr REESE, of Dortmund.

"On Vagrant Currents" (Electrolysis), by Herr W. H. LINDLEY, of Frankfort-on-the Maine.

"Photometry," by Dr. LEYBOLD, of Hamburg.

"On Heating," by Dr. E. SCHILLING, of Munich.

"On Gas-Meters," by Herr C. KOHN, of Frankfort-on-the-Maine.

"On Education or Training," by Dr. W. von OECHELHAEUSER, of Dessau.

"The Instructional and Experimental Gas-Works of the Association," by Herr REICHARD and Dr. BUNTE, of Carlsruhe.

The private business will include the appointment of Technical Committees and the election of officers for the ensuing year, and the decision as to the place for next year's meeting.

On the Tuesday afternoon, members may elect to visit either the Tegel works of the Municipal gas undertaking or the Berlin Water-Works at Friedrichshagen on the Müggel-See. In the evening there will be a convivial gathering at the Restaurant in the Zoological Gardens. On Wednesday afternoon the Exhibition of German Naval Architecture will be visited; and in the evening members will be present at a performance in the Winter Garden. On the Thursday evening, there will be a concert, followed by a banquet and ball in the large hall of the Philharmonie. On the morning of Friday, the 19th, there is a choice of six works open to inspection—The factory of the German Welsbach Incandescent Gaslight Company; the Mariendorf works of the Imperial Continental Gas Association; the works of Messrs. Siemens and Halske, at Nonnendamm; the Municipal gas-works in the Danzigerstrasse; the Charlottenburg Municipal gas-works; and the Oberspree works of the Imperial Continental Gas Association. The meeting will conclude in the afternoon with an excursion to Werder, near Potsdam.

A special programme of arrangements for ladies, while the technical proceedings are in progress, has been arranged.

There will be no exhibition of technical appliances, &c., in connection with this year's meeting.

Visitors may attend the meeting, and should apply for tickets before the 31st inst. to Herr Bremer, the Manager of Public Lighting at Berlin.

ASSOCIATION OF WATER ENGINEERS.

Programme for the Annual Meeting.

WE learn from a circular just issued by the Secretary of the Association (Mr. Percy Griffith, M.Inst.C.E., F.G.S.) that the Thirteenth Annual General Meeting will be held in the Council Chamber at Birmingham from the 25th to the 27th of June, under the presidency of Mr. Henry E. Stilgoe, M.Inst.C.E., the City Engineer and Surveyor. The following papers are promised for reading and discussion:—

"Wells and Boreholes for Town Water Supplies." By Mr. H. ASHTON HILL, M.Inst.C.E.

"History and Description of the Cape Town Water-Works." By Mr. R. O. WYNNE-ROBERTS, M.Inst.C.E.

"The Water Supply of Hythe, Kent." By Mr. CHRISTOPHER JONES.

"The Design and Construction of Impounding Reservoirs." By Mr. WILLIAM WATTS, M.Inst.C.E., F.G.S.

A description of the Frankley and the Elan Valley Water-Works, by Mr. E. ANTHONY LEES, and a description of the works of the South Staffordshire Water Company, by Mr. H. ASHTON HILL, M.Inst.C.E., will be circulated among those taking part in the visits to these works.

On Thursday afternoon, a visit will be made to the Frankley Water-Works of the Birmingham Corporation, which will be inspected under the personal guidance of Mr. F. W. Macaulay, M.Inst.C.E., after which tea and light refreshments will be provided by the President and Mrs. Stilgoe. On Friday afternoon, there will be a visit to the Coombe's Wood Works of Messrs. Stewarts and Lloyds, Limited, where the members will inspect the processes involved in the manufacture of wrought-iron and steel tubes suitable for all purposes. On Saturday, an all-day excursion will be made to the Elan Valley Water-Works of the Birmingham Corporation, which will be inspected under the personal guidance of Mr. E. Anthony Lees, Secretary of the Water Department. For the convenience of those who may be compelled to leave Birmingham on Saturday afternoon, an alternative visit will be arranged to the Ashwood, Hinksford, and Spring's Mire Works of the South Staffordshire Water-Works Company, under the personal guidance of Mr. H. Ashton Hill, M.Inst.C.E., the Engineer to the Company. The annual dinner of the Association will be held at the Grand Hotel on Thursday. On Friday evening, a reception will be held at the Council House, by the Rt. Hon. the Lord Mayor of Birmingham and the Lady Mayoress.

Mr. George Dawson, Managing-Director of Messrs. Newton, Chambers, and Co., Limited, whose death was announced in the "JOURNAL" for the 24th of March, left £31,820.

The President of the Board of Trade has appointed a Committee, consisting of Mr. G. R. Askwith, K.C., Sir John Gavey, C.B., Dr. R. T. Glazebrook, F.R.S., Major P. A. MacMahon, F.R.S., Major W. A. J. O'Meara, R.E., C.M.G., and Mr. A. P. Trotter, to prepare a programme for the consideration of the delegates to the International Conference on Electrical Units and Standards to be held in London in the ensuing autumn, and to make arrangements for the reception and assembly of the delegates attending the conference. Mr. M. J. Collins, of the Board of Trade, will be the Secretary to the Committee.

THE FRANCO-BRITISH EXHIBITION.

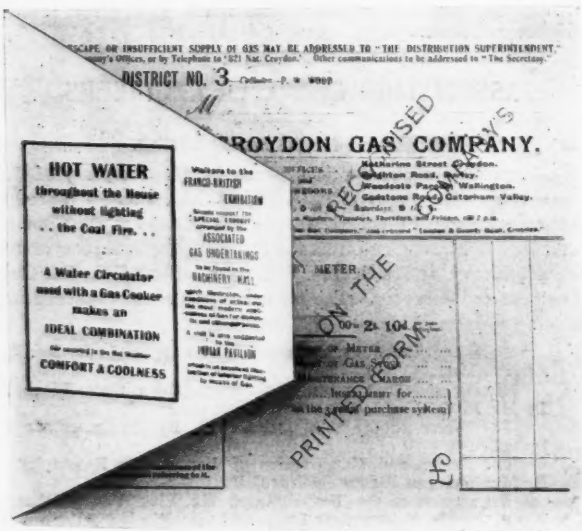
The Gas Section.

[A description of the general arrangement of gas fittings and appliances, and of the decoration and furnishing of the section was published in the "JOURNAL" last week.]

THE central and principal feature of the Gas Section Committee's exhibit—the suite of rooms—comprising domestic lighting, heating, and cooking was completed and lit up last evening. This is good work, considering the position of affairs less than a fortnight since; and thanks are due for this not only to Messrs. John Barker and Co., Limited, but to the energetic members of the staff of the Chief Inspector of the Gaslight and Coke Company who took in hand the gas part of the scheme. We are glad that such advance has been made in time for the visit of the King and Queen and President Fallières to-day.

A NOVEL SUGGESTION.

From Mr. W. W. Topley, the Secretary of the Croydon Gas Company, we have received a copy of the account form which will be sent out to the gas consumers at the end of the current quarter; and the form is novel and opportunely suggestive. The Engineer and General Manager of the Company (Mr. James W. Helps) is the Hon. Secretary of the Gas Section of the Franco-British Exhibition; and he and his colleague are minded that the



A Photograph of the Account Form.

gas consumers of Croydon shall not visit the vast show at Shepherd's Bush without having their attention particularly directed to the Gas Section Committee's exhibit in the Machinery Hall. Folded over on to the face of the account, there is (as the illustration shows) a triangular shaped flap, on the front of which visitors are informed that (as will be seen in the exhibition) hot water can be obtained throughout a house without lighting a coal fire, and that a water-circulator used with a gas cooker makes an ideal combination for securing in hot weather comfort and coolness in the house, and yet all the convenience of a hot-water supply. Alongside this intimation is another, which suggests that visitors to the Exhibition should inspect the special exhibit arranged by the associated gas undertakings, to be found in the Machinery Hall, which illustrates, under conditions of actual use, the most modern applications of gas for domestic and other purposes. On the back of the flap, the gas consumer will learn that "from no other fuel in Croydon can so much heat be obtained at so little cost as from coke."

HOW IT MAY BE DONE.

The "Electrical Times" has published an account of the proceedings at the conference that was held between the chief officials of the London Electric Supply Companies and a number of electrical traders, to consider the steps to be taken to equip the stand of the Associated Companies at the Exhibition. This is an extract from the account of the proceedings: It was stated that "Messrs. Verity's would show motors, fans, and fittings; Messrs. Rashleigh Phipps and Co. would furnish the kitchen (but wondered what to do with the products of the culinary operations). Mr. Cunliffe Owen here mentioned that *a refrigerating plant would be needed to cool the rooms, so that the contrast between the electrical rooms and the gas rooms should be very marked.*" Whether the remark was seriously or jocularly made is not stated; but visitors to the electrical exhibit should inquire whether any *hocus pocus* of this kind has been indulged in for the purpose of giving a false impression. There is nothing we shall like better than this immediate contrast of gas and electricity at the exhibition. Perhaps the Electrical Committee will suggest some cooking and water-heating competitions with the Gas Section Committee, to test such points as time occupied and costs incurred in similar operations. The expenses of installation and other matters might also be investigated while the business rivals are in such close proximity to each other, both with the one object of catching the public eye and ear in the interests of their respective commodities.

ARTISTIC ENAMELLING.

We regret that, after all, the pleasure is to be missed of having, on the industrial side of the Gas Section Committee's exhibit, a demonstration, under the supervision of Mr. Alexander Fisher, of artistic enamelling, using gas-heated furnaces in the process. The place is not regarded by Mr. Fisher as suitable for performing the delicate operations involved in his high-class work.

CORRECTION.

In the notice of the exhibit of the Wigan Coal and Iron Company last week, there was an obvious misprint. The coking-ovens should have been described as the Semet-Solvay.

The exhibits in which we are interested of most of the firms showing in the Gas Section or in other parts of the Machinery Hall, were noticed last week. The following are supplementary.

MESSRS. B. GIBBONS, JUN., AND MESSRS. GIBBONS BROS.

One among the few firms ready for the opening day of the Franco-British Exhibition were Messrs. B. Gibbons, jun., Ltd., and Messrs. Gibbons Bros., Ltd., who are making a joint and comprehensive display of their special lines. Among the exhibits are fire-bricks, tiles, and all classes of specials for retort-settings (including Gibbons and Masters' patent "A.B.C." tiles), boiler-seating blocks, fire-clay sight-boxes, cast-iron sight and plug boxes, &c., retort mouthpiece and furnace door, Layton's patent mainlayer's adjusting screw, M'Ewen's patent stopped pipe preventer, Hansford's patent automatic recording gas-meter, Gibbons' well-known patent steel roller chains in all sizes from $1\frac{3}{8}$-inch pitch up to 12-inch pitch, push-plate conveyors, band conveyors, india-rubber and cotton canvas conveyor bands, elevator and conveyor buckets, hot-coke conveyor chains, plummer blocks, and all kinds of mill gearing. In addition, there are a large number of photographs of various contracts recently carried out by the two firms.

NATIONAL GAS-ENGINE COMPANY, LIMITED.

Supplementing the information in last week's issue regarding the gas-engine exhibits, we learn that the National Gas-Engine Company, Limited, are exhibiting one of their "YE" type, 100 maximum brake horse power engines, with producer gas. It is fitted with the latest improvements in the way of ring lubrication of the main bearings, compressed air starting, electric ignition, &c., and is supplied with gas from a suction producer gas plant of the "Gold Medal" design. It may be remembered that, at the trials of the Royal Agricultural Society held at Derby in 1906 for suction producer gas plants, the Company won the highest award, with a gas plant of this type.

ELECTRICITY SUPPLY MEMORANDA.

The Metropolitan Electricity Schemes in Parliament—New Conditions put a Fresh Aspect on the Situation—Centralization and Suspected Dangers—The Power Business Possibilities—Low Power Loads.

THE parliamentary history of the Electric Power Bills that have session after session been promoted for London, is a strange one; and it presents a curious mixture of wonderful intention to confer inestimable blessings, a stubborn resistance to the acceptance of those blessings, wholesale condemnation of existing supplies and generating stations, and an equally strong refutation point by point. We are having the old story in its every detail all over again now, in the proceedings, before a Select Committee of the Upper House of which Lord Cromer is Chairman. The Bills under their consideration are the London and District Electricity Supply Bill, the London Electric Supply Bill, and the London (Westminster and Kensington) Electric Supply Companies' Bill. The first-named measure is the one with which the ball was opened; and it led off with a good swing. It proposes a scheme of supply in bulk to authorized distributors, and for power to all and sundry, and especially to railway companies, tramways, and canals in London and adjacent districts in Essex, Kent, Surrey, and Middlesex. The area mapped out is 451 square miles; the capital sought to be authorized is 6 millions; and it is proposed to put the station down at Barking close to the Coalite Company's site. The witnesses for the Bill were, naturally, quite positive that the new Company would be sure to make good net profits, while enabling the existing suppliers of electricity to, with profit to themselves, shut up their stations and scrap their plant, and rely entirely upon this beneficent Company for a supply in bulk. Yet the existing suppliers treated the promoters' arguments as they would sophistry of the most brazen order, and urged that there was nothing the new promoters propose to do that could not be accomplished, and with greater safety by the present stations, particularly if Parliament would consent to the linking-up of the

systems, and otherwise establishing the concerns in a stronger position. This linking-up idea is described by the promoters of the power and bulk Bill as offering no final solution of the problem of giving London a cheap supply of electricity, seeing that there are no less than 66 generating stations in the area proposed to be supplied, and that consequently there is great waste of coal and labour, and other outlay the accompaniment of decentralization, which would be avoided and saved by centralization. The sweeping assertions as to ancient and inefficient equipment of the present stations, and as to the whole supply of the Metropolis being in a chaotic condition, have been made so often that those responsible for the well-being of the established services can hear of such things without turning a single hair.

The opponents of the London and District Bill (who, of course, are mainly the existing suppliers) contend that there is now more reason than ever why they should not be subjected to competition in power supply. The pendulum of events has been swinging with such remarkable velocity of late that no hasty judgment can be formed as to whether or not they are right. There is sound argument both for and against them. It is urged by them that the metallic filament lamps are reducing lighting business, and that they can less afford to forfeit any part of their day business now than they could have done in the time when the carbon filament lamp dominated the private lighting situation. On the other side there is the fact that, in the case of certain of the Companies, the proportion of units of electricity supplied for power is comparatively small; but the price is such that the average revenue per unit for lighting and power is on the decline, and is causing some of them to look with serious eye upon this financial trend. Although it is sometimes contradicted, it cannot be seriously denied that the low charge of the undertakings for power is only possible through the lighting output and the higher charge per unit for lighting. The new high-efficiency lamps are eating into the lighting output; and the output at the low price per unit is growing. This is a very awkward coincidence. If the power supply is taken from the existing undertakings by a new company, the decline in the average revenue per unit would receive an effectual check; on the other hand, a large amount of capital and plant would be thrown idle. It is a strange situation that has been created; and there is the prospect of greater tangle yet. Another aspect of the question is that, if estimates of the likely requirements of the existing stations from a bulk supply company have been based on the circumstances of the past, and not on those created by the low-consumption high-efficiency lamps, they will require some revision; for what with the stations being robbed of their power supply, and the new lamps reducing the lighting load, the existing stations, in most cases, would for a considerable period meet district requirements. However, there is no doubt about this, that the ultimate aim of all these big power schemes for London and beyond has been, and is now, to string-up the whole of the electricity supplies of a big area into one; and Parliament must see to it that—this being the view—it is not brought about by any depreciation of the value of the capital that has done the pioneer work in electricity supply in London. This is only fair; and any disregard of the condition will be an injustice. The tales, now well worn, of industry in London languishing for electricity for power purposes may, from the experience since Electricity Power Bills for London were first introduced (from which time the tale dates), be placed by Parliament in a secondary position to justice.

To get back on the proceedings before Lord Cromer's Committee. Centralization of generation—by the concentration of plant in a spot to which fuel can be carried at the least expense, where condensation is well and cheaply provided for, and where expenses in management, labour, and so forth can be reduced to the minimum—is the one thing that is to effect this wonderful transformation in matters electrical. But Lord Cromer was struck with the brilliant analogy that this scheme of centralization had to the putting of all one's eggs into one basket. He inquired what would happen if, by stealth, a foreign battleship in time of war succeeded in getting up to Barking, and peppered the generating station, or if an anarchist took it into his head that the generating station was a superfluity of modern times and might well be dispensed with, or if a fire occurred and burned the place to the ground, or if a strike took place? Would London then be deprived of its electricity supply. Astonished Counsel for the promoters scented danger to centralization in the inquiry; while Counsel for the opponents saw opportunity. Counsel for the promoters had difficulty in getting over the man-of-war, the anarchist, fire, and so forth; and some eloquence was expended in trying to convince the Chairman that, even if there were other stations, the same causes that endangered one might endanger all. Mr. Balfour Browne, for the associated Electric Supply Companies, trotted in the remark that New York, Paris, and Berlin, did not depend upon a single electricity station; and as to the same causes affecting all stations, he pointed to the fact that, at the time of the great strike of the South Metropolitan Gas Company's men several years ago, the employees of the Gaslight and Coke and Commercial Companies did not follow suit. The Conspiracy and Protection of Property Act anteceded the General Electric Lighting Acts; and the provision making it a penal offence for workmen to jeopardize supply only applies to gas and water, and not to electricity. There is an error here that requires to be rectified. On the same question of centralization, Mr. Robert Hammond was not strictly in accord with truth when he cited the Metropolitan gas supply as a precedent. He informed the Committee that the mistake that has been made in the electricity supply of London was made years ago in permitting a little gas company to establish itself in every district. Amalgamation of these little gas companies has since taken place until "there has been an aggregation into two works only for London." That is not correct. There are three Gas Companies in London, and several in the big area proposed to be supplied by this new London and District Electricity Supply Company. The three Gas Companies in London have several works among them; and in the outer area covered by the Bill, there are very many more gas-works. Mr. Hammond was unfortunate in his illustration.

The great point that the promoters of the London and District Bill make is that the industries of London are really pining for cheap electricity. It is calculated that there are at least 300,000 to 400,000 horse power used for industrial purposes in London that have not been provided for by electricity. This fact alone does not afford any evidence of a general desire on the part of manufacturers to change from their existing methods to new; nor does it afford any evidence of a necessity for an independent electricity supply company. The promoters allege that the cause of this abstention from electrical driving is due entirely to the fact that the charge by the present suppliers of electricity is too high; but the existing suppliers showed conclusively during the proceedings on the Administrative Company's and the London County Council's Bills of previous sessions, that they were in several cases (whether financially justified in doing so is another matter) supplying for power purposes at figures coequal with those proposed by their would-be competitors. And it must not be forgotten that competition with electricity has grown broader and more intense since this question of electricity power supply for London was first of all mooted. Town gas supply is to-day, for power purposes, cheaper than ever it was; and the efficiency of gas-engines has been greatly improved. Suction and producer gas, too, have also to be reckoned with. Notwithstanding cheap electricity supply by the municipal undertaking, it is something over which the promoters of these ambitious schemes may well ponder when they remember that the London County Council last year found in Shoreditch alone that, whereas only 42 factories were employing steam, no less than 181 were employing gas power. The cheapness, handiness, and reliability of gas power, the little danger attached to it, and the fact that skilled men (as is the case with electrical machinery) are not required as attendants, are all in favour of the gas-engine. It is, to take one example, the proved disadvantage of electrical coal-cutters, that there are more accidents arising through them in coal mines from the fact that the miners are not skilled electricians than from anything else.

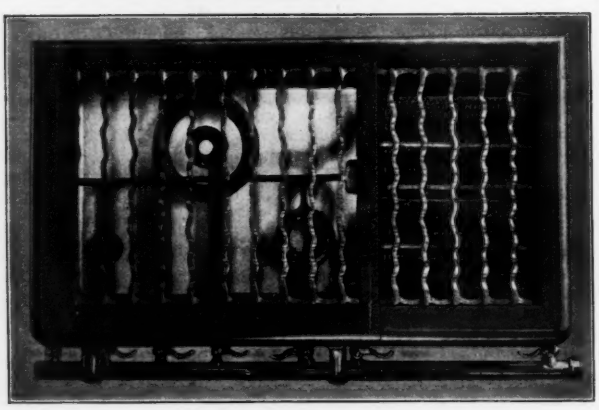
Besides greater competition and the advantages offered by competitors, there is also the forcible testimony of unsuccessful power companies in the Provinces, even in the big industrial centres, which should cause Parliament to pause before imposing upon London a fresh Company with power to bring any further confusion into the crowded streets—crowded both on the surface and below. Comparatively speaking, the power requirements of London are of a small order, and really without similarity to those of the big industrial centres in the Midlands and farther North. The London Companies have found that their load-factors are, generally speaking, very low; and this is borne out by the experience of the St. Pancras Borough Council. They offered power consumers a supply at the rate mentioned in the Administrative Company's Bill of a previous session—£4 per kilowatt and ½d. per unit beyond—instead of a flat-rate of 1d. Several consumers have returned to the flat-rate, having discovered that their accounts were larger instead of smaller. This is evidence of the smallness of the possible power custom in many districts; and it should not be disregarded by Parliament. On the other hand, it is quite reasonable to inquire why, if the power supply is so poor, there is the bitter opposition to an independent company coming in? Then from the public point of view, there is little sense in allowing a further big expenditure on electricity supply in London, excepting in so far as development on, or perhaps amalgamation of, present systems goes. A largely extended capital cannot possibly be remunerative under present conditions for several years—perhaps never. This means waste; and in the struggle the existing users of electricity must ultimately be the victims of both the waste and the conflict.

A Pocket Hydraulic Calculator.—We have received from the St. Bride's Press, Limited, the Wynne-Roberts Pocket Hydraulic Calculator, which has been designed to simplify the operation of ascertaining the dimensions, gradients, velocities, and discharges of circular pipes. It is applicable to pipes ranging from 3 to 40 inches diameter, with gradients of from 1 in 1 to 1 in 10,000; and it will furnish a number of solutions at one operation. The calculator consists of five rings (two being movable), representing gallons, diameter of pipes in inches to obtain discharge and velocities, inclinations, and velocities in feet per second flowing full or half-full. It is circular in form, 4 inches in diameter, mounted in a neat book containing full directions and a number of examples. There is a small table to ascertain the flow, &c., in sewers, when they are conveying less than their full capacities. The designer of the calculator, the production of which involved considerable labour and occupied much time, is Mr. R. O. Wynne-Roberts, M.Inst.C.E., who claims that it is the only one of its kind upon the market. Its price is 5s. net.

CONSTRUCTED ON EXPERIENCE.

THE two great factors in producing improvement are experience and investigation. Which is the more important, we are not prepared to say; but there is no doubt that the contributions of experience to improvement in all directions—with economy, efficiency, and convenience as results—have been, and continue to be, invaluable. Take a gas cooker, we have watched its development from the primitive sheet-iron box to a condition of such utility that properly used the present-day stove is indispensable, and to a condition in which it can be almost described as a thing of beauty, and, to the housewife or the cook, a joy for ever. This development has come about more from experience than from special investigation. Perhaps there is no one in a better position than Miss Helen Edden, M.C.A., occupying as she does the proud

The New Cooking-Stove.



View of the Top of the Hot-Plate.

position of principal demonstrator to the Gaslight and Coke Company, to say from experience what is requisite in a good gas-cooker, for the purpose of promoting efficiency, economy, and convenience. It is her business to know of the troubles and the inconveniences experienced by the users of such stoves, and to give advice to ameliorate them. But she has found that something more than advice is required to embrace remedy for all complaint, and that something is that the structure of cooking-stoves needs modifying and improving.

In their "Advance" gas-stove No. 1, we have Miss Edden's views and ideas materialized by Messrs. Wilsons and Mathiesons, Limited; and, with certain improvements of their own, they have evolved a stove which will appeal with success through its several novel and attractive features. "Several" is hardly the word; to be definite, there are sixteen features which have to be described, and certain of them have been patented by Messrs. Wilsons and Mathiesons. Perhaps, therefore, the most convenient place to start the description is at the bottom of the stove, rather than deal with the features in their order of merit. We find the oven is raised from the floor on legs, which can be supplied of any height. One advantage of this is that the oven can be used without the user stooping; and it will be admitted to be a great convenience by those who have seen the conditions of the situation of gas cooking-stoves in some houses after a short installation, that the raising of the oven permits the ready cleansing of the floor underneath. Those who like cleanliness in the region where their food is cooked will appreciate this. Another effect of the raised legs is that no protecting plate or slab is required on the floor. The next feature is that the oven and oven burners are protected from draught. The burners obtain a pure air supply from the outside and in connection with them is a Bray air and gas adjuster, so that a perfect mixture is not left to chance. Regarding the protection from draughts, it should be explained that the drip-pan fits the bottom of the oven, sliding into side channels specially provided for it, and is so constructed that only the air necessary for combustion and cooking is allowed to enter the oven—thus preventing the cooling of the oven by an excess of air. On opening the door of the oven, it is noticed that it is simply held in position by a spring catch. This is a sort of "safety-valve;" and there can be no fear of damage by explosion, for all that would happen in such an event would be that the oven door would be blown open.

Looking inside the oven, it is seen that, in addition to its use as a single oven it can be divided into two or three ovens. This is accomplished by the use of Wilson's patent baffles on the shelf-rests, with ordinary baking sheets, so that half or one-quarter of the oven can be shut off. The advantages of this are that only an amount of gas sufficient to heat the size of oven actually required is used; or half the oven can be heated for pastry or quick cooking, and the other half for slow cooking. It may be mentioned that the baking-plates when in position are safely locked in by side catches; so that there is no danger of drawing them out or letting them fall when taking out or putting in the articles to be cooked. The side swing rests, as is customary now, are removable. The oven-burners are loose, and are of shorter length than is usually the case. They are set back into the sides of the oven; and the flames play outwards—and so all are protected. The top of the oven, by the removal of two brass nuts, can be taken out for cleaning the flue. Although the stove is raised by legs well from the floor, the hot-plate is not higher than ordinarily; and this has been accomplished by its extension as seen in the illustrations, so as to allow of a separate sunk chamber (with sides, back, and base closed in) at one end for the grill-pan. This is a novel and distinct improvement. The grilling arrangement is a double one; and either of the burners can be used independently, while the grill-grates can be raised or lowered by separate levers. The portion of the hot-plate over the oven is, through this relief from the grilling arrangements, closer than usual to the enamelled top of the oven; and this is where the reduction in height is obtained, to compensate for the longer legs. The hot-plate is spacious; and we imagine it will be found very comfortable to work with. The burners are spaced so that the top can be used to full advantage. One large concentric burner is provided for the quick boiling of large vessels; and this and the other burners are fitted with gas and air adjustment for securing a perfect combustible mixture. There is also a plate-rack (which can be raised or lowered), with an enamelled back for protecting the wall. Among the smaller conveniences, there are (under the grill chamber) a match-box holder, and a place for the spent matches, as well as a towel rail. The taps are all at the front of the stove; and they are protected by the rail which carries them.

One of the most important features of the stove has been left for description at the end; and we have to examine the body of the stove to make its acquaintance. The body is really built up of a treble casing—thus providing a double air-jacket, and making the oven casing practically heat proof. The construction has been devised with the view of conserving the heat, and losing little by radiation. By removing two screws, the outer enamelled casing can be taken off. Then the middle casing is seen. This is of polished tin; being an application of the principle that reflection prevents loss of heat by radiation. On removing the polished tin casing, we see the innermost strong casing or body intact. The removal of the outside and middle casings is the work of a minute. With the enamelled casing, there can be no excuse for any want of cleanliness on the part of the user; and, looking at the stove from the point of view of the gas supplier, the cost of maintenance should by it be greatly reduced. The door and top have also a double air-casing.

It is seen that here we have a cooking-stove embracing many ideas; it is interesting in its features; and it will, we believe, in use, vindicate the choice of its name of "Advance." It is proposed to construct the stove in three sizes.

Under the presidency of the Earl of Plymouth—a former First Commissioner of Works—a new association has been formed under the name of the "Concrete Institute." Concrete in its various forms, both plain and reinforced, is playing a very important part in the civil engineering works and building operations of the country, and the Institute is the outcome of a demand among the professional and industrial interests concerned to have some centre for discussion, investigation, and research work. The Institute commences with 125 members.

SOUTHERN ASSOCIATION AT SALISBURY.

THE members of the Southern District Association of Gas Engineers and Managers had their May outing on Thursday last; and, in accordance with time-honoured custom, they visited their President (Mr. Norton H. Humphrys), in the beautiful and historic city of Salisbury. From far beyond the northern side of London and from the distant south-eastern, southern, and south-western areas of the large district covered by the Association the members came, and, without the local gentlemen who honoured them by their company during the day, they numbered not far short of sixty. Weather that reached the ideal for such an occasion, combined with the charming environment, gave zest to pleasure. All went with the one object in view of enjoying themselves. And they did enjoy the day; and those who were the hosts, and those who arranged the programme, found reward in the complete manifestation of the pleasure of their visitors.

The *rendezvous* in the morning was the gas-works; and there the visitors were received by Mr. George Fullford, J.P., the Chairman of the Salisbury Gaslight and Coke Company, his colleagues, the President, and other members of the staff. Let us stay for a moment to remark that the Company enjoy an unbroken record of prosperity—having paid maximum dividends for more than forty years; and while they cannot boast of advancing by leaps and bounds, they can show steady, uninterrupted progress. The consumers have always been fully considered, and a low price charged for gas, with quality and purity strictly maintained; while careful but at the same time liberal management has promoted a sound business. Tested according to the usual standards of consumption—per head of population supplied, or the number of cookers on hire stated as a percentage of the total number of consumers—the Salisbury results stand comparison with towns of similar size and circumstances. The Company were among the first to adopt the system of supplying stoves or apparatus on hire or hire-purchase terms, the incandescent system for public lighting (the whole of the district being under their control), and the maintenance system as applied to all classes of lighting. As the works are on the outskirts of the district, and badly situated for public access, there is a commodious office and show-room for the use of consumers, situated in a good position in the centre of the city, with workshop for the use of the large outdoor staff of lamplighters, gasfitters, and service men. All the outdoor men wear caps of blue cloth bearing the name of the Company and also a number. The use of this number in place of the man's name in the books saves a considerable amount of writing; and this is only one of the ingenious little devices for saving labour or for improving efficiency that are in evidence throughout the working offices.

At the works, the visitors inspected the retort-houses, which are fitted throughout with generator furnaces; and in connection with this department an important extension is in progress. The gas passes through a large foul main, an Everitt's tar extractor, condenser, scrubber, washer, and purifiers. In the exhauster-house, the steam-engines, whose capacity has been outstripped by the increasing demand, are assisted by a gas-engine. The new purifiers (as described to the Association by Mr. Humphrys some three years since) came in for a share of attention. The arrangement of gasholder valves was highly approved. The whole of the inlet and outlet valves are contained in one group in the meter-house; and the meter, governors, and valves are all within easy reach. There is a Cowan automatic safety bye-pass governor between the main inlet and the main outlet; and a board inscribed, "This label must always be attached to an open outlet-valve," is to be seen on the valve in use. When changing, the second valve must be opened, and the board moved to it, before the first can be closed. In this house, a "Gazini" apparatus for enriching the gas and dissolving naphthalene was to be seen in operation; and the extreme simplicity of the process was particularly noted. A shed containing complete plant for drying stone chippings, heating tar, and manufacturing asphalt of any desired quality was also on view.

Some of the visitors arrived early in the morning; and after inspecting the gas-works, by arrangements kindly made by the City Surveyor (Mr. Alfred Bothams), they were taken to see the Corporation water-works and sewage works; and later in the day, another small party paid a visit. It is one of the pleasing features of life in the city of Salisbury, that the relations of the Corporation and the Company are those of two bodies having one identical interest, and that is the welfare of the city. It was also remarked that the streets are throughout illuminated—and well illuminated—by incandescent gas-burners; the view of the Corporation being that their duty to the ratepayers demands from them not only efficiency, but a due regard to the obtaining of the best value for expenditure, which is a free interpretation of the word "economy."

From the gas-works, the members walked through the streets, the aspect and general air of which are those that seem to be inseparable from a cathedral city, and in which, through the presence of such edifices, even visitors soon drop into talking and thinking of things ecclesiastical. Many interesting features were pointed out; and then the beautiful confines of the Cathedral were reached, in the midst of which the majestic building stands. The members were shown all over the sacred building. Its beauties and treasures were descanted upon by their guide, and the historic associations clustering about the building were one by one brought to memory.

From the Cathedral, the members went to the Town Hall, and in the Council Chamber (the walls of which are lined with valuable oil paintings), by the permission of the Mayor (Mr. Robert Hall), the Chairman and Directors of the Gas Company entertained their visitors to luncheon. In the chair was Mr. George Fullford. It was well filled—the position of representative host being one in which good nature and vivacity always sit well. On his right was his Worship the Mayor; on his left the President. Unfortunately one of the Directors (Mr. William Young) could not be present; but the Chairman had supporting him his fellow-members of the Board, Mr. S. R. Adkins, Mr. H. B. Wells, and Mr. Alfred Watson. Mr. Wilfred Fletcher, the Company's Auditor, and Mr. Arthur Whitehead, the Secretary, were also present. The Town Clerk (Mr. Francis Hodding), the City Surveyor (Mr. Alfred Bothams), and Mr. M. H. W. Devenich were also of the company. Near the head table were the ex President of the Association (Mr. Harold W. Woodall), and the Hon. Secretary (Mr. A. F. Browne).

After luncheon, the Chairman offered the members a very warm welcome to the city of Salisbury; and he stirred up pleasant recollections of the visits to the city of the old South-West Association in 1884, under the presidency of the late Mr. Thomas Hardick, and in 1894 under the presidency of Mr. Humphrys. He recognized the greater importance of the present Southern Association, through the amalgamation of the Southern and the South-West bodies. Belief in the great value of the Association to the gas industry was also expressed; for scientific research, he observed, was ever producing problems for the solution of the gas engineer—new ideas of work, suggested improvements, new modes of illumination, and new designs for cooking and heating. All these had to be experimented upon to obtain that which was most reliable. By the papers contributed to, and discussed at, their meetings he realized that the members were much helped in the work of their profession, which was one that had two interests to fairly serve—that of the company or corporation and that of the consumers. They all had every confidence in the growing success of the gas industry in all its various branches; and if there was one thing that stood out more prominently than the others, it was the firm entrenchment of the slot gas-meter and cooker in the home of the British artizan. Having referred to the importance, too, to the gas industry of its residual products, and the ever-growing number of bye-products, he said both he and his fellow-Directors thanked their visitors for the honour collectively done them by appointing their esteemed Engineer and Manager as President of the Association. He (the Chairman) could assure those present that Mr. Humphrys had the entire confidence of the Board. They had experience of his work; they knew him; they trusted him. He had, too, the confidence of the whole of the clerical and working staff; and he was held in the highest esteem by the citizens of the city, and by all with whom he had been and was brought into contact. He trusted the year of work of the Association would be thoroughly successful, and that the Association would continue to prosper in its objects year by year. Concluding his remarks, the Chairman proposed "Success to the Southern District Association of Gas Engineers and Managers."

Responding on behalf of the members, the President said he must express his personal gratification for the kind way in which the Chairman had referred to him. They in Salisbury knew that Mr. George Fullford never lost an opportunity of saying a graceful word or doing a graceful act. Therefore he thanked him for his words, and for their endorsement by the other members of the Board. He also thanked them for the kindness exhibited in connection with the post he (Mr. Humphrys) had the honour of holding in connection with the Association. It was indeed a great help to an Association such as theirs to have the support of their Directors and Committees. He acknowledged the assistance of Mr. Whitehead and the members of the staff, in gladly and willingly doing everything in their power to make the meeting a success; and, personally, he was extremely pleased to see such a good and representative gathering of the members.

Then the toast of "The Mayor" was gracefully submitted by Mr. H. W. Woodall, who, in the course of his remarks, said that almost every gas company in the country worked under regulations and conditions imposed by Act of Parliament; and Parliament had in their wisdom arranged that the carrying out of the regulations and conditions should be controlled by the municipalities of the different towns. By them the control could be conducted in a manner that was somewhat harassing to the companies, and in a manner which resulted in increased price to the consumer and the local authority itself. But if they could judge by the kindly and courteous way in which the Council and the Company had joined together that day to give the members welcome, they could conclude that harassing conditions were not found in Salisbury. In the response by the Mayor, were complimentary references to the manner in which the Company (which he described as a progressive one) carried on their duties.

There was one more toast; and it was proposed in felicitous terms by Mr. James Paterson. He remarked that the members were being entertained by the Chairman and Directors of the Salisbury Gas Company; and it was their pleasant duty to drink to the success and prosperity of the Company. This was most heartily done; and Mr. Adkins, with a charm that could not be excelled, responded, telling at the same time of many of the wonders and beauties of the city.

After lunch there was a drive to Wilton House, over which and

the beautiful grounds the members were allowed to roam by the Earl of Pembroke, who had granted his permission in the most graceful manner. The celebrated treasures and beauties of the house, and the picturesque environment, were greatly admired, and were almost the sole subjects of conversation while driving citywards. Reaching the Town Hall again, tea was served, after which—on the initiative of Mr. W. E. Price—there was a warm and hearty acknowledgment to the President for what he had done for the pleasure and comfort of the members, and for the privileges he had secured.

CARPENTER'S IMPROVED COAL-CARBONIZING PROCESS.

The specification of Mr. Charles Carpenter's patent No. 14,371 of 1907 describes his method of distilling or carbonizing coal wherein "a core of coarse pieces is formed within a layer or layers of coal of greater fineness."

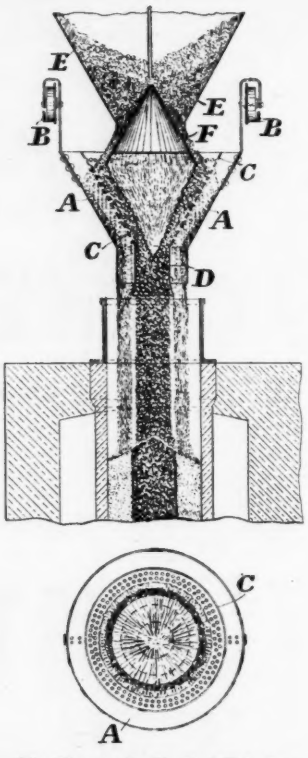
The patentee points out that, in the distillation or carbonization of coal in the manufacture of illuminating gas, it is usual to charge the coal into the retort or other heated chamber without having any regard to the arrangement of the coarse and fine particles or pieces, or, if there has been any attempt at such arrangement, it has consisted in placing the fine particles in the middle and the coarser particles next to the walls of the retort. He has found, however, that better results from the carbonization may be obtained if the distilling chamber is so charged that the core or middle is formed of the larger or coarser pieces surrounded by a layer of fine particles.

Accordingly his proposal is to so charge the distilling chamber that the coal lies with the largest and coarsest pieces inside and the finest particles outside, or next the chamber walls. The finest portions of the charge are less suitable for the penetration of heat than the larger portions, which do not lie so closely together, and these finer portions are by his method of charging placed close to the walls of the retort, and therefore receive the initial flow of heat from them. The distillation proceeds from the outside, and it takes place last of all in the "core;" and, as the "core" is made up of all the large portions of coal, their interstices form "convenient channels for allowing the escape of gas to take place with freedom and ease." Similar results may, he says, be obtained "by charging simultaneously with the coal a central stream of coke or coke breeze, the interstices of which also form a convenient channel for drawing off the gas." This latter arrangement is preferred in cases where the coal used is uniformly fine.

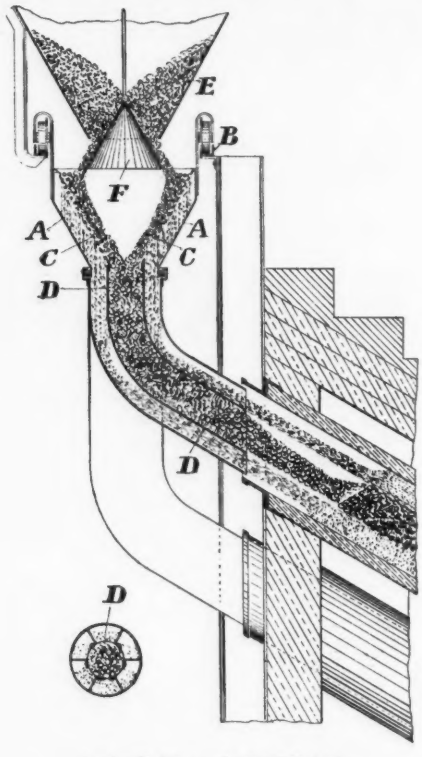
The coal may be charged by any suitable means—for instance, a cone-shaped screen provided with concentric holes increasing in size towards the centre. All the coal is run into this screen, which automatically sorts out the sizes in the way described, with the result that "the retort is charged by different layers of coal increasing in coarseness from the walls towards the centre."

The illustrations show examples of apparatus constructed on the above lines suitable for charging either vertical or inclined retorts.

A is a cone-shaped charging-hopper carried upon wheels running on rails B in the usual manner. Within the hopper is fixed a perforated conical screen C (so arranged as to leave an annular space between it and the walls of the hopper) terminating at its lower end in a tubular mouth D, the perforations preferably increasing in size towards its lower end or mouth D. Above the



The Charger for Vertical Retorts.



As Applied to an Inclined Retort.

charging apparatus is the coal-hopper E, of taper or conical form and having within its lower end or mouth a cone F, supported from above. Its position is so regulated as to leave an annular outlet, through which the coal is fed and deflected by the cone F, outwardly, on to the walls of the perforated screen.

When the coal is run from the hopper over the cone on to the screen, the smaller coal passes through the perforations and is guided by the hopper A into the retort, where it forms a layer of fine material around the walls, while the larger coal passes down inside the screen and through the tubular mouth D—thus forming a core of larger or coarser material in the centre of the retort.

Referring to the apparatus in the act of charging an inclined retort, it will be seen that the hopper A is provided with a tubular extension, suitably curved, for insertion into the mouths of the inclined retorts; and the tubular mouth D of the screen C is extended within this tube, and is held in position by radial plates. Coal is fed, as before described, from the hopper E—the smaller coal passing through the screen C and down the tubular chambers, while the larger coal passes down through the tubular mouth D and forms a core of coarser material within the retort.

When coke or coke breeze is used for the purpose of producing the "core," a double-charge appliance is provided, consisting of an annular chamber to hold the coal and a central one to hold the coke or coke breeze. A slot or hopper at the bottom of this vessel is opened simultaneously, and the two streams of coal and coke or coke breeze are allowed to flow into the retort.

The Indebtedness of Local Authorities.—In answer to a question put by Mr. Ridsdale, the President of the Local Government Board recently gave the figures of the total indebtedness of the local authorities of the United Kingdom at the close of certain specified financial years. The following are the most recent: 1899-1900, £353,063,968; 1903-4, £469,205,425; and 1904-5, £544,715,088. The following are the amounts of the sinking funds of the English and Welsh local authorities for the years named: £10,715,492, £13,963,279, and £15,032,055.

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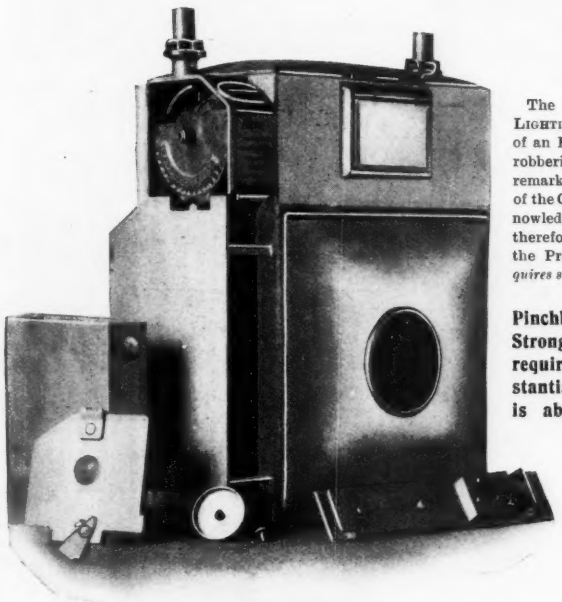

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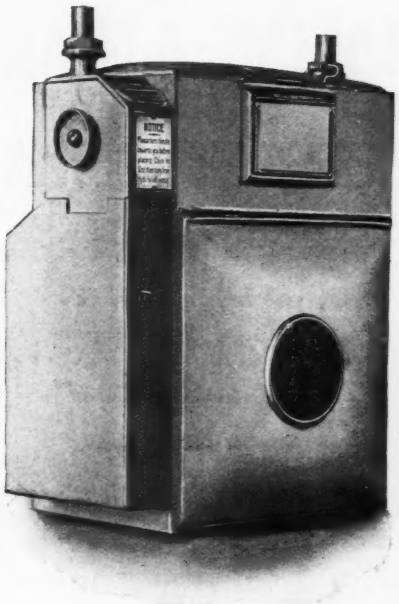

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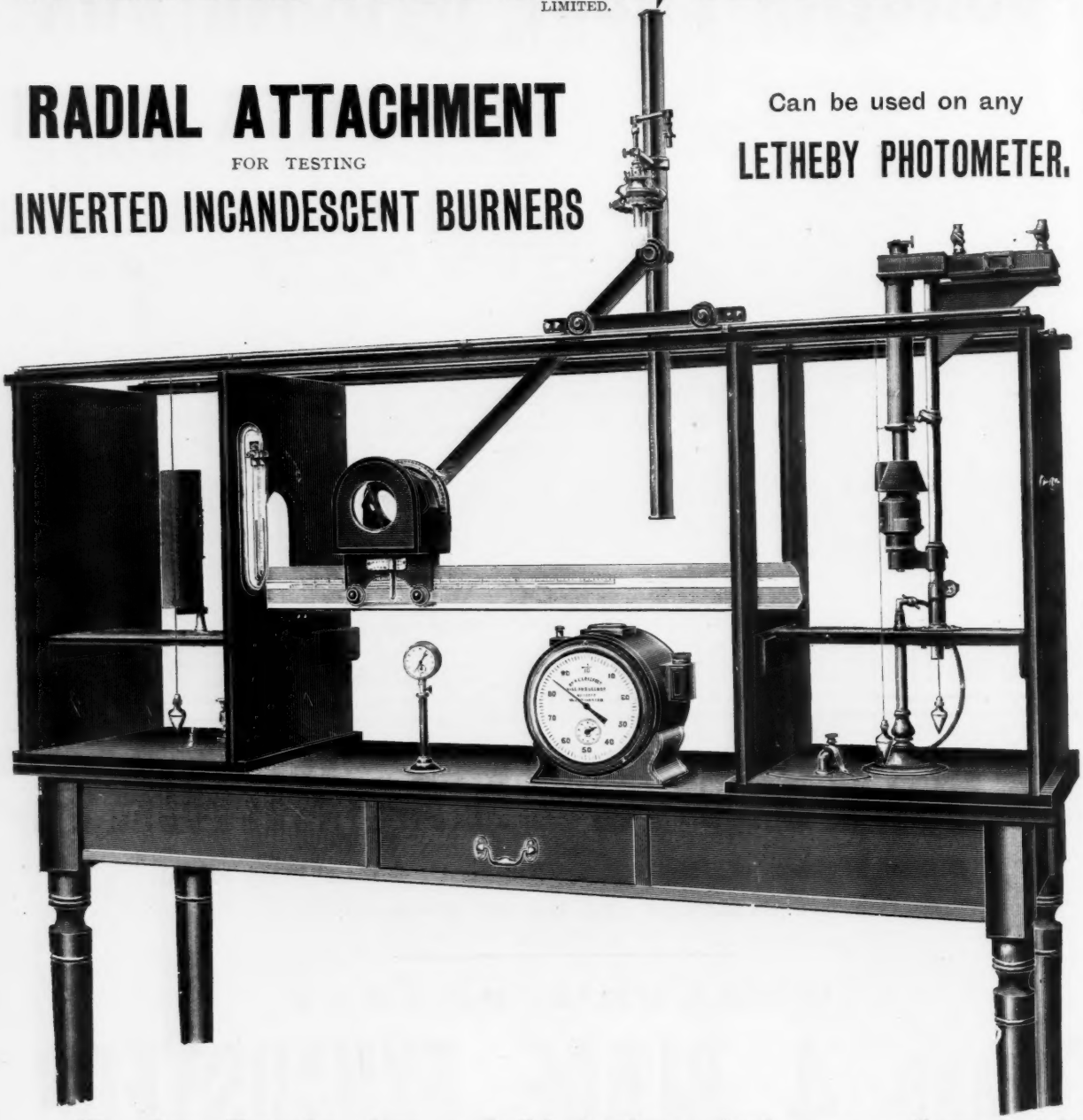

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ROUND THE WORLD—AND SOME GAS-WORKS.

By Maurice Graham.

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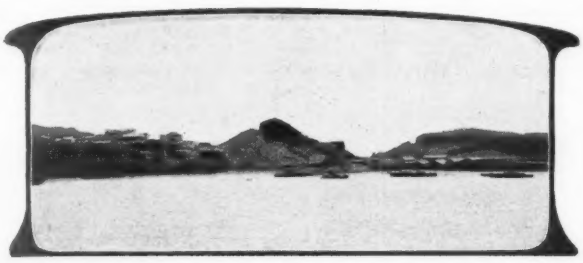
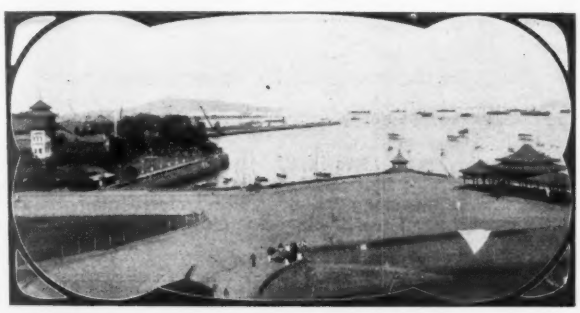
II.—BOMBAY.

After touching at Aden, which is a dreary coaling station (Photograph No. 13), Bombay was reached on Dec. 20 last. Bombay's magnificent harbour is one of the best natural harbours in the



Photograph No. 13.—*En route* to India—Aden.

world, and admirably serves this great and glorious city of the East. Photograph No. 14 gives some faint idea of the huge area of sheltered water, full of the shipping of all nations, but that of Great Britain largely predominating. Only two hundred years ago, the Island of Bombay was occupied by a veritable pirate—



Photograph No. 14.—The Harbour of Bombay. On the Left is the Yacht Club.

Cunaji Angria; no ship being safe from capture. One hundred years ago, every artisan had a sword and spear for self-protection. To-day, Bombay is pre-eminent by reason of its prosperity in commerce and in industry, which have gone forward by leaps and bounds, as the fruit of peace and security. Its rapid growth of sea-borne traffic created many pressing requirements, only to be met by the science of the engineer, applied through wise and business-like administration. The Port Trust, though only forty years old, has made great strides in building docks and providing up-to-date equipment. The Trustees are also providing for nearly three times the present volume of trade. Railway facilities are being extended, and labour-saving machinery adopted—such as aërial ropeways, transporters, cranes, and quick-lifting apparatus for loading and unloading vessels. In short, Bombay spells "Prosperity."

A Visit to the Gas-Works.

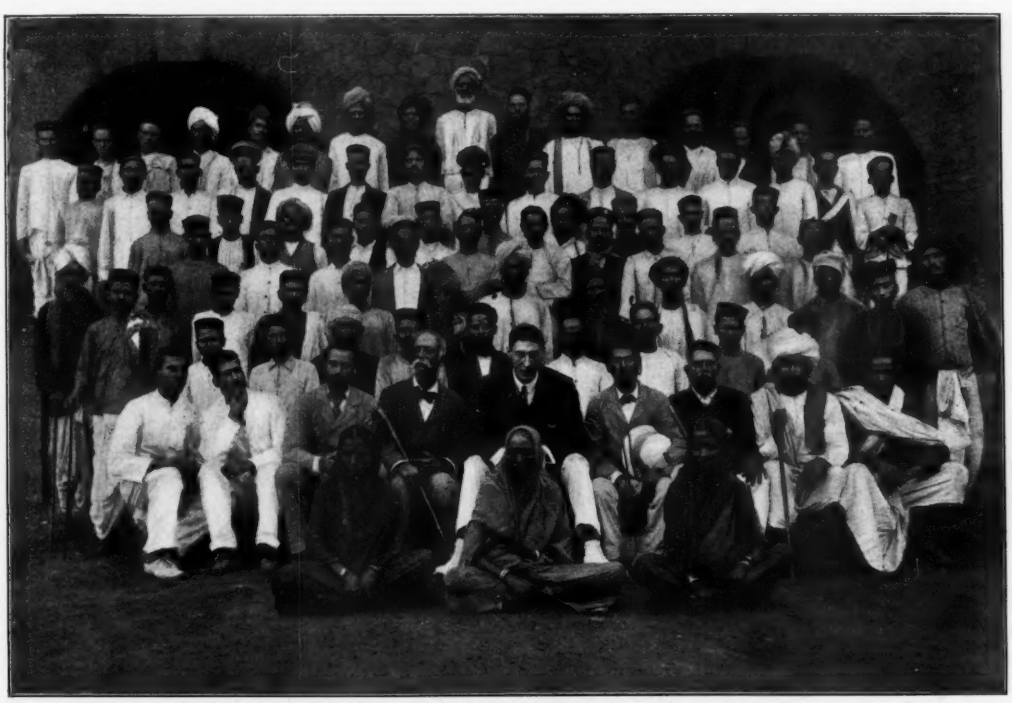
The offices of the Bombay Gas Company, Limited, are a splendid block situated in Standard Buildings in the centre of the city. There the writer met the General Manager and Chief Engineer, Mr. A. R. Burch, who was at work with his coat off, and looked as if he meant business. As arranged, the writer was met by Mr. Burch the following day at the suburban station, Chinchpokli; and, after a walk down the line, the gas-works were reached. A general view of the works is given in Photograph No. 15. They are well and most substantially built, and suit the

Photograph No. 15.—General View of the Bombay Gas-Works.

The large chimney is now demolished for the extensions to No. 1 Retort-House. The octagonal tower contains the Engineer's Office, and the meter and photometer. The big shed covers the purifiers.

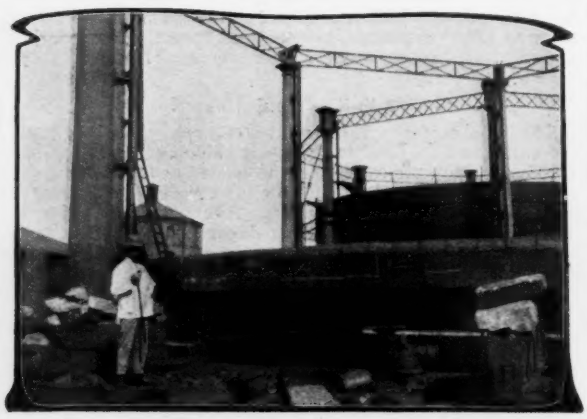
requirements of an Eastern city. They were established in the year 1863, and cover three acres of ground, serving a population of 1,000,000, of whom there are 4500 consumers. There is the usual growth of decorative palms and plants which make these works so interesting and pretty. A visit to the various departments showed that the Engineer had a full grasp of his undertaking and of getting the utmost both out of his apparatus and of his men. He seemed ever-ready to adopt the latest improvements at a minimum of cost, and continually on the look-out for better results. The general efficiency of the works, coupled with their cleanliness, was immediately noticed.

The two retort-houses contain four through horizontal beds of seven retorts, direct-fired; and two other benches, one having five beds of seven, and the other six beds of six retorts—all 20 feet long. These are heated on the regenerative principle. Extensions are at present being made by the addition of a new bench; the work being



Photograph No. 16.—Group of Retort-House Stokers, with the Assistant Engineer and Manager, Mr. W. J. Lane, in the Centre.

done by the Engineer's own men. This is Mr. Burch's usual practice, as will be noticed hereafter as regards other plant. There is no necessity to introduce machinery at the present moment, as the results with hand-labour are quite satisfactory. The coal was well carbonized, and everything was working quite smoothly. An



Photograph No. 17.—Corroded Gasholder undergoing Repair. The Manager, Mr. A. R. Burch, is on the Left.

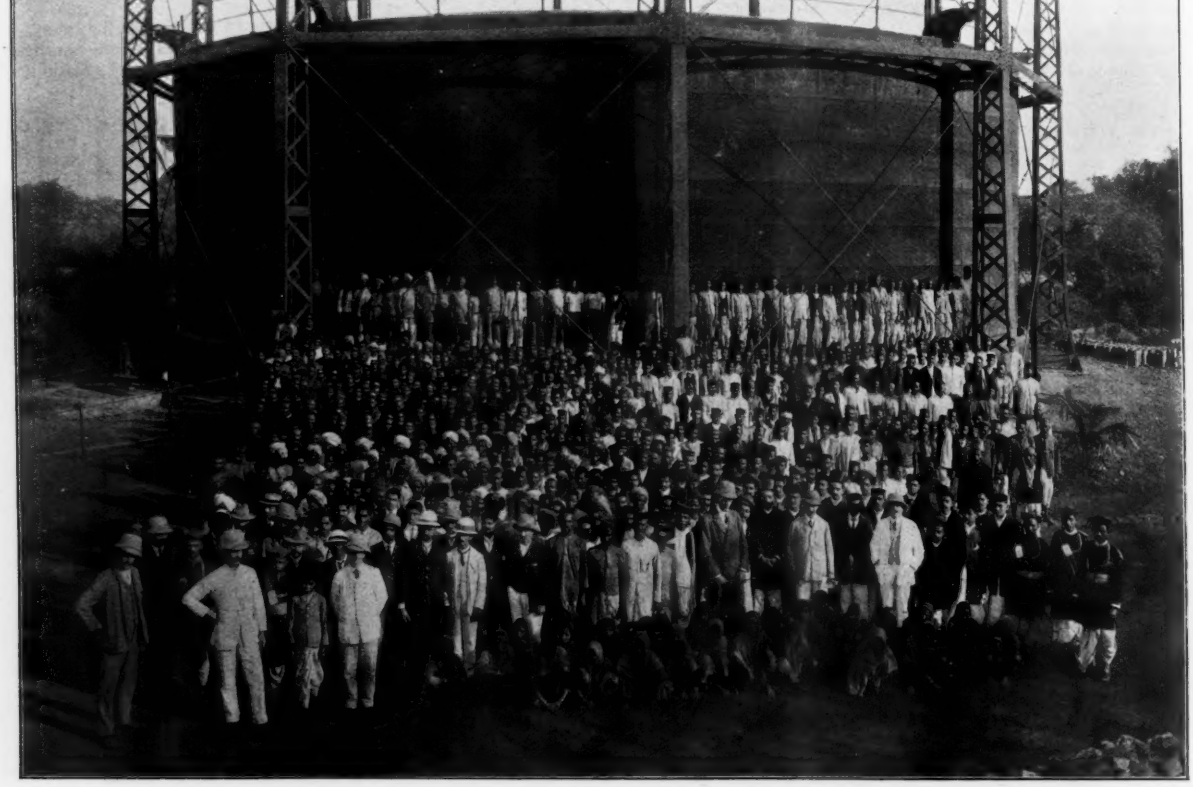
interesting group of the retort-house stokers, with the Assistant-Engineer and Manager, Mr. W. J. Lane, in the centre, is reproduced in Photograph No. 16. Passing through the house to the coal-stores in the yard (which can contain 5000 tons), one notices that the coal is stacked to a height of 6 feet only—the risk of spontaneous combustion being so great. Australian, English, and some local coals are used for distillation, all of which give favourable results.

A tar-distilling plant is next seen. Mr. Burch is getting ready for the tar-macadam roads which will shortly be the rule, as motors are being largely used on the island.

The next item of interest, *en route*, was the repairing of a gasholder by the Engineer's own men, of which an illustration is given in Photograph No. 17. Mr. Burch is on the left of the picture. The writer inspected the holder, and found (as explained to him) that corrosion had taken place to such an extent that the work of repair had become necessary. The dip of the holder, originally ¼-inch plate, was eaten through and honeycombed. The inside trussing and bracing, originally ⅜-inch thick, were reduced to the thickness of a penknife blade. The Engineer has a scheme in hand for remedying this trouble with corrosion; and should he succeed, great credit must be given to him, as the wear and tear at present are very great. When the work is finished, he will have made a good job of it. Mr. Burch smilingly regretted that he was unable to take advantage of Mr. Tysoe's recent suggestion, as the holder was too far gone. [To the writer it seemed queer that, though thousands of miles away, yet, by the circulation of the "JOURNAL," all thoughts expressed, and suggestions made, are talked about as if one were merely reading the same in a London office.] The sun's rays were pouring down, and the heat was terrific. The gasholder plates were so hot that it was impossible to bear one's hands on them for more than a second.

Photograph No. 19.—Coke Yard and Bullock Carts.

There are three gasholders in all—two of 80 feet diameter, with two and three lifts; and one of 90 feet diameter, with two lifts. A partial view of this No. 3 gasholder, with an interesting group of all the employees of the Bombay Gas Company in front of it, is shown in Photograph No. 18.



Photograph No. 18.—View of Gasholder No. 3, with Group of all the Employees of the Bombay Gas Company.

Photograph No. 20.—Works Office Staff: Clerical, Drawing, and Chemical.

Passing through to the coke-yard, one was struck by its cleanly appearance and by the bullock carts which are used for the transport of coal and coke. An illustration of them and of the coke yard is given in Photograph No. 19. There is an excellent local market for coke, which is supplied both in bulk and in bags. Good prices for it are obtained, and the large-sized crystal pieces warranted a high figure. It is of interest to note that diluted ammoniacal liquor is used for quenching hot coke, as the high price of sulphuric acid prohibits the liquor being profitably worked up into sulphate of ammonia.

The condensers (with their efficiency increased by the internal use of liquor), the two rotary exhausters, the tower scrubber, and brush washer, were all working smoothly and to their full capacity. An air-compressor was also at work giving power to the air-drills and other pneumatic tools used on the holder. It further provided temporary ventilation under the stage of the retort-house. This seemed a good idea, as it was so hot. In the new settings before referred to, the drawing stage is being raised so as to ensure better ventilation.

The purifier-house is of the usual design for a ground-floor house. There are three 20-feet and four 12-feet boxes; the purifying material used being oxide of iron. The purifiers are worked to their utmost capacity, as the annual increase is about 15 per cent.; the annual make being 160 millions, and the maximum make per 24 hours about 700,000 cubic feet. So that the rapid development of Bombay will soon necessitate an increase in the purifying plant.

The stores were visited; and the greatest credit must be given for the careful organization of this department. A new system has been adopted, and the huge room reminded one of the stores of a large engineering works. It is now easy to obtain any required article at a moment's notice, and also to take stock readily and rapidly.

The meter repairing and incandescent mantle burning departments are well fitted for their purposes. There is also a splendid mechanics' shop, which contains lathes and drills, and is being gradually improved. Connected with it is a foundry for making small castings. The writer was greatly struck with this innovation, because when one is so far away, and perhaps only a small casting is required for an important, purpose, the problem of obtaining it is at once solved by making it on the spot and relieving one of all anxiety, instead of waiting two or three months for the goods to be delivered from England. Among the work being turned out were noticed hand-wheels, valves, ashpans, and similar castings—all made out of the scrap-heap of the gas-works' yard.

Healthy Housing.

The gas-works are situated on the lowest lying ground in the district, and just the very place for its purpose, with direct communication with the railway. It is surmised, however, that they are also in the worst part for catching all sorts of fevers, as the sanitary conditions surrounding the works appear to be not of the best. It may here be mentioned that there is no general system of sanitation in Bombay; and as it would now cost about two or three million sterling, it would involve so heavy a tax that only a serious plague sufficient to ruin the city would compel the Government to step in and put matters right. Native flats designed on European lines have been tried; but the habits of the natives do not lend themselves to modern dwellings. With ten or twenty in one room, and with refuse thrown out indiscriminately, it will be understood that the working-class districts of Bombay are veritable hotbeds for germinating fevers. Also, a dense fever mist rises about two or three o'clock in the morning to a height of 20 feet. These are only a few of the drawbacks one has to encounter on accepting a post in the East; and therefore all encouragement should be given a loyal staff in carrying out their arduous duties thousands of miles from the land of their birth.

In the writer's opinion, the most serious question of all foreign gas undertakings is the maintenance of the general health of the staff—men who are sent out to look after the company's property, its present interests, and future welfare. The writer's professional career and experience have shown him that supervising engineers must be at ease in their own minds as regards their own private living matters before their best work and capabilities are to be

Photograph No. 21.—Another Gas-Works Difficulty. Snake and Nest of its Eggs.

expected. The writer is here merely expressing his own opinions on these points, as no information regarding them has been given him by any member of the gas staff at Bombay. They seem thoroughly happy, and in the greatest earnestness in carrying out the duties they have to perform. In this connection, a photograph (No. 20) of the works' office staff (clerical, drawing, and chemical) may not be without interest. The Manager, Mr. Burch, is in the middle, with Mr. Lane, his Assistant, on his right.

Caste and Other Difficulties.

The peace and prosperity of India are largely due to the number of its religions and to its hundreds of castes. Witchcraft, superstition, telepathy, magic, and hundreds of other mystic methods are believed in by the labouring classes; and, therefore, the management must be organized so as not to interfere with them, so long as duties are properly performed. The native considers it quite right to get the better of you if possible, and has

Photograph No. 22.—Pay-Day at the Bombay Gas-Works.

a persistency and artfulness beyond measure. In a gas-works there are a thousand and one things that a gas-worker will not do, owing to caste; and consequently one or two other men of lower caste must be called in. In other words, the caste question is another name for increasing labour, and may be called in modern language a "Trade Union." The manager, therefore, is not in an enviable position in dealing with his labour problem, which has become more difficult owing to the interference of some visiting labour M.P.'s, who give hints on Trade Union principles, in the same way that they first educated Italian workmen fifteen years ago—and doubled or even trebled the price of labour.

Although the cost of labour per man appears small—say, about 8d. per day—it is in reality the same as in England, because the native does very little, and requires a lot of rest. Consequently, and also owing to their caste considerations, five or six natives are required to do the work of one good steady English gas-works labourer. When a native fitter is employed, he requires another to help him; and he in his turn another to do work both consider beneath their caste. So that the cost of labour comes to about the same as in a well-managed works at home.

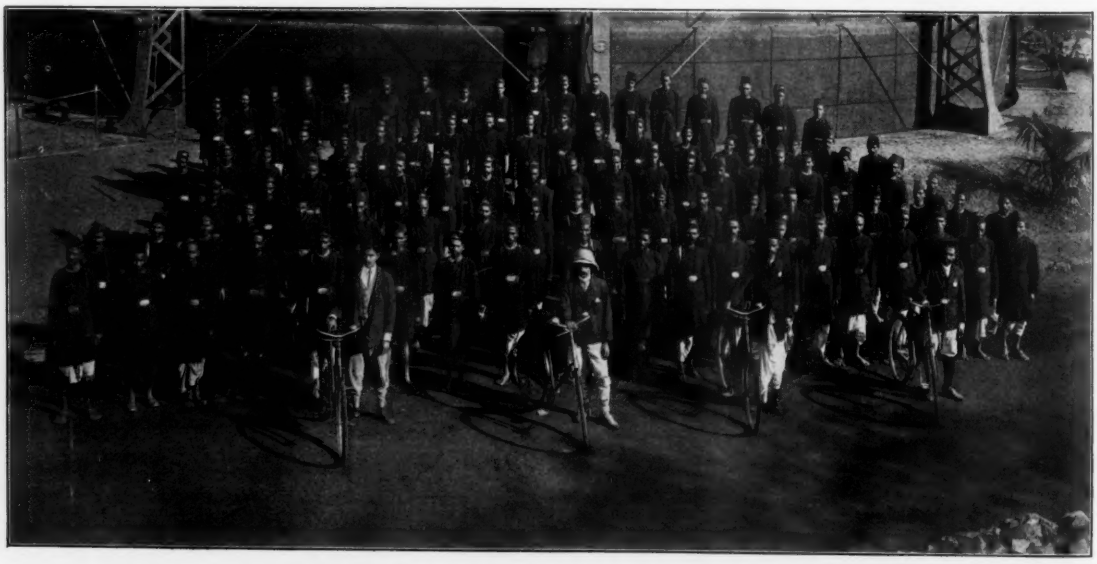
Photograph No. 21 shows another difficulty of a different sort. It is a photograph of a snake and nest of its eggs, which were found by Mr. Lane in the gas-works' garden. It was rather a startling discovery, as the snake was 8 feet long and one of the most poisonous kind in existence. With assistance—and a spear—he succeeded in killing it.

Another photograph (No. 22) of some interest gives a good idea of the gas-works pay-day in Bombay. Between 1200 and 1500 men have to be paid, and the ceremony (at the entrance to the gas-works) takes about two hours.

Public Illumination.

An evening drive round the city in a "gharry," or local conveyance, gave one a splendid view of the incandescent lighting that is achieved by the Gas Company. There are in all 70 miles of mains; and the standard illuminating power of the gas is 14 candles. The whole of the city is lighted entirely by incandescent gas; and, by the time this article is published, high-pressure lighting on Sugg's system will be in use almost everywhere. The main streets, squares, piers, promenades, &c., are all beautifully lighted, and present a brilliant scene from a boat in the harbour. There is an excellent corps of lamplighters, a good idea of whom can be got from Photograph No. 23. Special demands for lighting arise at all great religious ceremonies, marriages, and so on, especially among the Parsees, when thousands of incandescent lamps are fixed temporarily by the Gas Company, who do a large business in this way. A rival attempt at lighting with ten electric arc lamps has been a "glaring" failure, as they only served as a contrast to enhance the high power of incandescent gas. The price of electricity is about three times that of gas. Slot gas-meters are largely used everywhere.

Cooking by gas is only just being introduced, as the native



Photograph No. 23.—A Good Corps: The Lamplighters and their Foremen.

method of cooking does not lend itself to anything else but charcoal. The latter is, however, rising in price; and so attention is being drawn to gas-cookers, which will shortly make their appearance in large quantities, and further increase the already considerable day consumption of gas.

In conclusion, the writer's thanks are due to Mr. Burch for the courtesy extended and more especially for the information afforded, by which this article is made, it is hoped, interesting to readers of the "JOURNAL." May the Manager's efforts on behalf of his Company's interests be as highly appreciated as was his kindness to the writer!

To the Assistant-Manager, Mr. W. J. Lane, are due acknowledgments for kindnesses (and photographs) received, which added to the enjoyment of the gas-works' visit. After his six years' residence at Bombay, Mr. Lane is somewhat acclimatized to the weather and the ways and dodges of the natives. He is a loyal servant of the Company, and speaks highly of his chief, whom he designates "Sahib."

Finally, the writer is of the opinion that the shareholders of the Company have a valuable property, which will, in the natural order of things, increase as rapidly as will the assured prosperity of Bombay itself.

AGITATION AMONG ITALIAN GAS-WORKERS.

FROM Milan newspapers of the 17th inst., we learn that there is continued unrest among the employees of the Union des Gaz and Continental Union Gas Companies at their Italian works at Milan, Genoa, Alessandria, Modena, and Messina.

The General Council of the men's Union have issued a communication in which they refer to their grievances, and demand the appointment of a fully authorized representative of the Gas Companies with power to settle disputes as they arise. It is said that for some time past—especially since the strike last October—the conduct of affairs by the Managers of the various works and the General Manager at Milan has tended to exhaust the patience of the men; and seeing that more than once, in matters of small importance, it would have been easy to find a solution of the difficulties by judicial means; and considering that the continuation of such a state of affairs will lead to loss of confidence in the managers on the part of the men, and will be injurious to the interests of the Union des Gaz Company; and whilst declaring that it is the sincere wish of the Council of the Trade Union that rules and agreements should be loyally interpreted, so as to avoid useless and expensive conflicts—the Council demand that the Board of Directors of the Gas Companies should appoint a proper representative in Italy with full power so as to regain the required "calm and confidence" of the men, and to determine with more promptness and conciliation those questions which arise on the interpretation of the rules and regulations. Further, the Union declare that they will not be able to assume any responsibility for the course that the men may take in the five towns named if the above demand is not granted.

Such a manifesto as the above forms rather curious reading in English eyes, and the barely veiled threat at the end of it hardly augurs peace and tranquillity. But from various sources, we have for some time past been informed of dissatisfaction and unrest among the gas-workers, not only in the French and London Gas Companies referred to, but in others as well. In February last, a few days after the new works at Bovisa (Milan) had been started in operation, a strike—short and sharp—ensued. The trouble really arose because the stokers at these new works had been taken exclusively from the employees at the Porta Nuova (Milan) works of the Union des Gaz Company, and none from the Company's two other works at Milan—St. Celso and Porta Venezia. The men claimed that to work the modern plant at Bovisa, stokers should be chosen proportionately from all the three works in the city. To achieve this, at mid-day on Feb. 14 all the men ceased work. After brief consultations between the parties, peace was restored, and the General Manager, Signor Lacombe, agreed provisionally to the men's demands; and so twelve men from the St. Celso works, seven from Porta Nuova, and three from Porta Venezia were allocated to the Bovisa new works—instead of all twenty-two stokers coming from Porta Nuova alone. Our contemporary "Il Gaz" wisely abstains from any comment on this episodal strike.

Accounts of recent strikes at other Italian gas-works also come to hand from Naples, where questions of pay were involved; and from Castellamare, where the men ceased work in sympathy with their Neapolitan comrades. We believe that these disputes are now amicably settled.

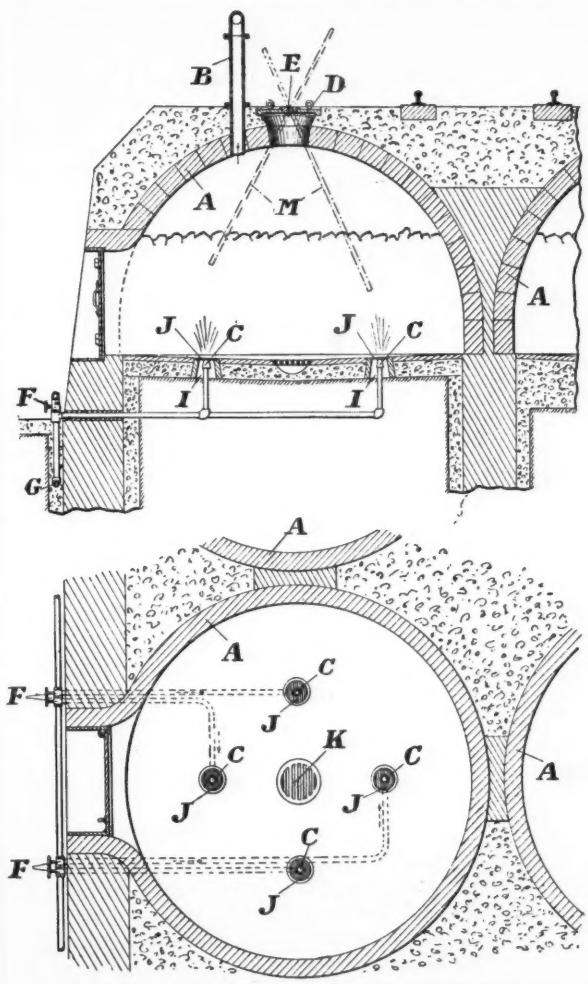
Midland Association of Gas Managers.—The spring meeting of the Association will be held next Friday at West Bromwich, where the members will be received by the Mayor, the Chairman and members of the Gas Committee, and the President, Mr. Harold E. Copp, the Gas Engineer to the Corporation. After an inspection of the gas-works, there will be a drive to Dudley Castle, returning through Dartmouth Park to the Town Hall. Later, the members are invited to lunch in the Public Hall of the New Free Library by the Chairman of the Gas Committee, Mr. J. E. Wilson, J.P.

THE "COALITE" PLANT.

Details of the Construction of Oven Used.

Last week there was published by the Patent Office the specification of the patent issued to Mr. Thomas Parker (No. 1972 of 1907) for his invention of "Improvements relating to the Distillation of Coal and other Carbonaceous Substances." It describes the various types of plant preferred by the patentee of the "Coalite Process" for the manufacture of his much-belauded fuel. A full summary of the specification is here given.

The distillation of coal is effected in an oven "such as a beehive coke-oven or an oven of any other type, but preferably providing a number of ovens in one plant in which the respective ovens or chambers are charged in succession." Tuyeres are provided in various positions in the oven for the admission of air under pressure, to ensure that the distillation may be uniformly effected throughout the mass and substantially at the same temperature; and means are provided—preferably comprising tuyeres disposed near the tuyeres before referred to—primarily, for the admission under pressure of combustible gases from one oven



A Beehive Coke-Oven adapted to the Manufacture of "Coalite"

where the distillation is in progress to another where the charge has just been admitted, "so that, by the simultaneous admission under pressure of the combustible gas and air through the tuyeres referred to, the combustion of the mass of coal may be started at various points throughout the mass, or the combustion may be started exclusively by the introduction of the combustible gases without the simultaneous admission of air, but air may be also admitted under sufficient pressure at various points in the mass after ignition so that the temperature of distillation may be maintained at the degree necessary to carry out the process covered by the prior patent referred to." The process may also be started by the deposit of live fuel at various points within the ovens. Steam may be admitted through the air-tuyeres by which the temperature of distillation may be lowered where necessary and means may be provided—such as three-way cocks—for the use of the tuyeres for both steam and air. By this means, it is said, "the oven will also serve for the production of water gas."

Fig. 1 is a sectional elevation of a beehive coke-oven provided according to the invention. Fig. 2 is a sectional elevation of a coke-oven of the cupola type. Fig. 3 shows a longitudinal coke-oven.

The "preferred construction" is as fig. 1. The "beehive"

coke-oven shown comprises a number of separate chambers or ovens A, from each of which, however, the gases evolved for the condensation of the tar and for the recovery of ammonia and for the purification of the staple gas resulting, are led away by means of an ascension pipe B. The process is started by the ignition of the charge at a number of points in the lower part of the furnace, or by the deposit of live fuel. There are tuyeres C at various points in the base and walls of the ovens, by which air under pressure is supplied to burn a portion of the coal in the immediate vicinity, and so that the temperature may be raised 800° Fahr., where necessary, during the process. The tuyeres may be provided at the upper part of the oven; and the process is started by the deposit of live fuel at the top. For this purpose, at or within the lid D or in the walls of the oven, there are observation holes E; so that, where necessary, by reason of too low a temperature obtaining, a quantity of air may be admitted through the tuyeres to bring a part of the charge in their neighbourhood to the necessary temperature. Thus the distillation takes place "substantially uniformly throughout the mass, and substantially at the same temperature."

The upper part of the oven is closed, so that the gases resulting from the distillation, diluted with a quantity of gases resulting from the combustion of the small quantity of fuel necessary to ignite and to maintain the necessary temperature in the mass, may be passed through the ascension pipe "for treatment in a manner substantially the same as usual in the ordinary process of gas manufacture."

The tuyeres, through which air under pressure is supplied to the fuel, are also used for the supply of steam by means of a two-way cock F, for the admission of steam into the mass from the steam-pipe G for the purpose of lowering the temperature of distillation where and when necessary, and for the effective "hydrogenizing" of the fuel towards the end of the process, or just after the illuminating gas ceases to come off, as well as for cooling the mass and purifying it. The supply of steam also serves for the production of water gas.

The ovens or chambers are provided with annular or other channels I beneath their bases, which are surmounted by gratings J, through which the combustible gases, and also air under pressure and steam from the tuyeres, may be admitted. Such a construction, the patentee remarks, would be convenient when water is used for cooling the fuel, as such an oven could conveniently be flooded, and its base or floor could be provided to have a uniform inclination towards the centre, where an outlet K is provided for the discharge of the water. By means of the pyrometers M, the temperature of various parts of the charge is ascertained.

In carrying out the invention as regards a coke-oven of the "cupola" type (fig. 2), or a longitudinal coke-oven (fig. 3), the oven A is provided with a series of steam and air tuyeres B, some of which are arranged in the conical base C of the oven and some in the walls D. Each of the tuyeres is connected to a steam-pipe E and a compressed-air pipe F, and a two-way valve G is provided on each; so that air and steam can be alternately supplied to the oven to regulate the temperature of the various parts of the charge. The tuyeres are preferably kept cool by water-jackets, so as to prevent rapid deterioration. The oven is provided with an ascension pipe H, for leading off the products of distillation. A series of observation holes I are provided for the purpose already described. The oven is charged through an opening J in its top, which is normally closed by a lid K, and is discharged through an outlet L provided at one or both ends of the oven.

The main claim made for the invention is: "In a coke-oven, the use for supplying air or steam for the purpose described of an apparatus comprising tuyeres each of which is connected to a breeches-pipe the branches of which supply air and steam respectively."

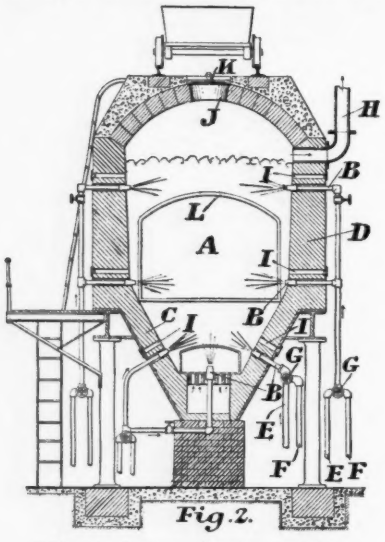


Fig. 2.

A "Coalite" Oven of the Cupola Type.

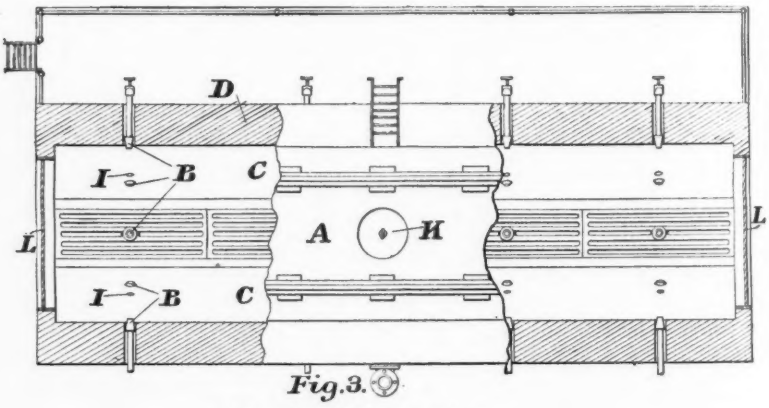


Fig. 3.

A Longitudinal "Coalite" Oven.

BEDS OF VERTICAL CARBONIZING CHAMBERS.

By Gustav Horn, of Brunswick.

The following is an abstract of a descriptive article in the "Journal für Gasbeleuchtung" of the 16th inst., by Herr Gustav Horn, the head of a firm of constructing engineers at Brunswick, giving particulars of a type of setting of vertical carbonizing chambers which he has devised.

The endeavour to produce large carbonizing chambers for gas manufacture found fruit in the Munich carbonizers which were last year described by Herr Ries.* This achievement was followed by the design of many different chambers—all, however, more or less on the same lines as the Munich pattern. The type about to be described differs from them in that the chambers are set vertically instead of on the slope. The success of the vertical retorts of Dr. Bueb, of Dessau, leads to the belief that the inclined large carbonizing chambers will be displaced by vertical chambers as soon as a practicable type of setting of the latter has been devised. The author had already given attention to the construction of beds of vertical retorts and of inclined carbonizing chambers, but has not proceeded with them, because he believes that large beds of upright chambers must ultimately prevail. A bed of this type which he has constructed is described in the sequel.

Such a bed of carbonizing chambers ought to fulfil the following essential conditions: The beds must be readily accessible on all sides, and the whole of the interior construction be open to inspection without difficulty; no interior parts must be covered so that they cannot forthwith be observed while carbonizing is in full swing; any small crack, leak, or injury should be capable of detection at once through the gas escaping from the chamber, and should be accessible for repair while still incipient. All parts of the setting must be accessible at all points, while in action, for stopping and patching in the manner usual with ordinary retort-settings. The whole of the nostrils by which the producer gas and secondary air enter must be so disposed close to the back wall that they can be reached by hand. Fancy sizes of fire-bricks should be little called for. The walls of the chamber should be as thin as is consistent with stability, and should have as few seams as possible; vertical joints especially should be avoided. The settings must not be limited to a particular size, so as to prevent chambers of greater height and width being used according to the work for which they are constructed. The heating of the chamber walls must be capable of being exactly controlled up to the height of the contained coal. Hence it is necessary that the walls should be heated in separate vertical zones; so that only so much heating gas need be admitted as is required for the carbonization of the coal in the particular zone. The discharging opening of the chamber must be closed in a simple manner, not upset by rough treatment. The discharging door must be independent of the structure of the setting, so that the latter is not affected by the fall and weight of the charge of coal. The heating must be so planned that the whole setting may be brought into action as quickly as possible.

These are the conditions which it has been attempted to fulfil in the construction of the setting which is shown, with three carbonizing chambers in the annexed sectional views. Fig. 1 gives a vertical section from back to front through the middle chamber of the bed, and fig. 2 an elevation of the producer side or front of the bed. Fig. 3 gives a vertical section from the back to the front through the line of the heating passages between the middle and a side chamber, and fig. 4 a vertical section, from side to side, through the gas-ways in front of the carbonizing chambers and through the producer. Fig. 5 is a vertical section from side to side through the middle of the bed, showing the three chambers in section. Fig. 6 is a horizontal section. For works of smaller

* See "Journal," Vol. XCIX., p. 438.

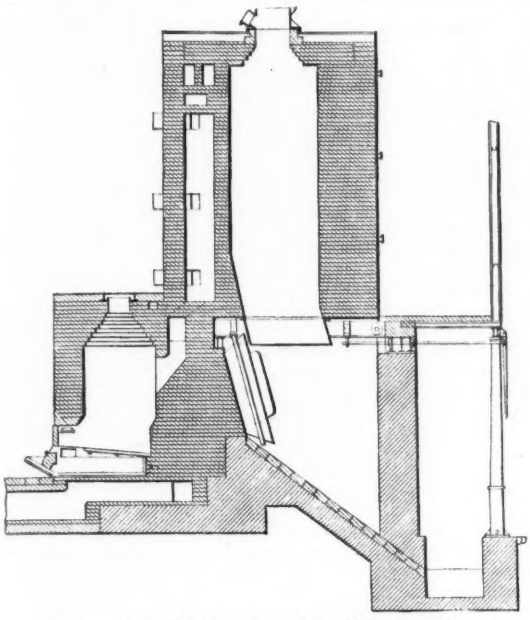


Fig. 1.—Vertical Section through the Middle Chamber.

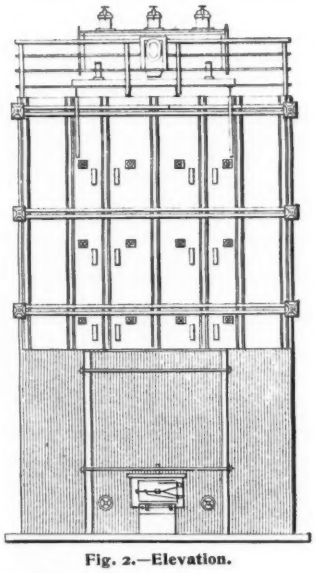


Fig. 2.—Elevation.

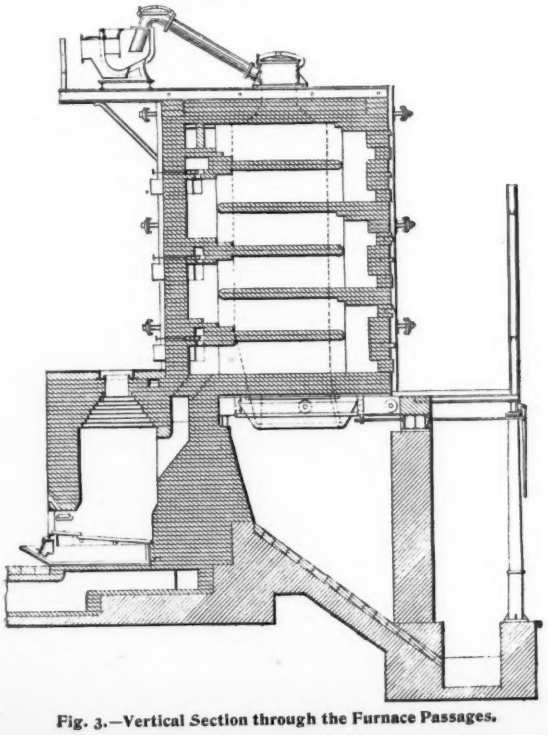


Fig. 3.—Vertical Section through the Furnace Passages.

size, the number of chambers may be reduced to two, and the advantages of the setting retained.

It is easy to increase or reduce the output of gas to any desired extent; for not only can the carbonizing time be altered, but the quantity of coal charged can be fixed according to the particular conditions by increasing or reducing the height and breadth of the chambers. The heating of the chambers can be readily controlled from one side of the setting; for, as already indicated,

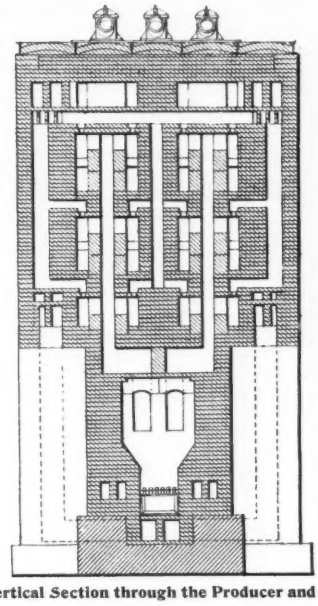


Fig. 4.—Vertical Section through the Producer and Gas-Ways.

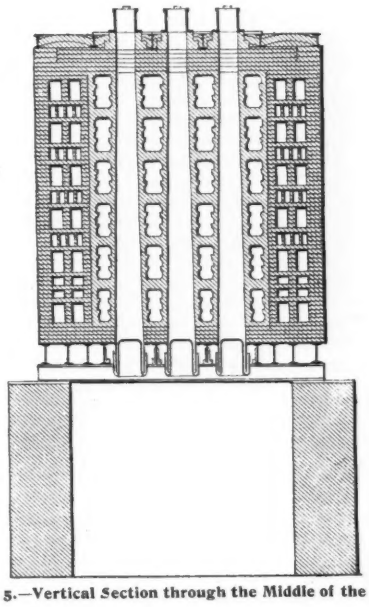


Fig. 5.—Vertical Section through the Middle of the Bed.

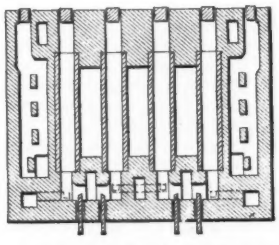


Fig. 6.—Horizontal Section.

either the top, bottom, or middle may be made at will the hottest zone. The accessibility of the interior of the setting allows the walls of the chambers to be observed while carbonizing is in full progress, and to be patched and repaired if need be. The chamber walls are directly heated from the producer in three different portions; only so much producer gas, with its complement of secondary air, being introduced to each zone as that portion requires. Thus complete and economical utilization of the heating gases is achieved. None of the nostrils are covered,

and all may be inspected while the setting is in action. They may be reached in case any repairs should, contrary to expectation, be required. The heating side of the chamber walls is ribbed longitudinally, to facilitate the reception of small patching plates in case repairs should be necessary. The lower door of the chamber has a simple water seal. It is readily opened and closed, and is not directly attached to the setting itself. The fall and weight of the charge of coal do not, therefore, affect the brickwork of the setting. The service of the setting is easy and simple; but little attention is required; and the setting can be brought into action within twenty-four hours.

The Thuringian Gas Company, of Leipzic, decided to erect an installation of this type of vertical chambers at their new central gas-works for the supply of the towns at Stassfurt and the Leopoldshall, and the adjacent villages of Hecklingen, Forderstedt, Azendorf, and Neundorf.

THE CHOICE OF RETORT-HOUSES.

Many of our readers are doubtless aware that in connection with the American Gas Institute there is a Bureau of Information, the Chairman of which is Mr. W. A. Baehr, the Engineer of the Laclede Gaslight Company. The method of procedure is for a question to be submitted to the Bureau, who give an answer to it; and this is followed by an "answer-at-large" from outside. The following question was recently put: "Given a choice of three retort-houses, the first built with 22-feet through retorts, the second with 15-feet retorts, and the third with 9-feet stop-end retorts, the treatment of the gas beyond the stand-pipe is identical in the three works. The 22-feet through retorts are charged and pushed by the machinery best adapted for them; and the heating of these retorts is the best that can be secured in the present state of the art. These retorts have a stand-pipe at each end, which stand-pipes are kept clean by stokers in the usual way, assuming the best retort-house practice in this respect, but not assuming any special machinery for reaming pipes. As the tendency of one of the pipes of each retort to do less than its share of the work is well known, ordinary watchfulness, such as might be expected in any well-organized gas plant, is to be assumed as guarding against this tendency, but no extraordinary precautions, the successful application of which have not been proved in practice. The 15-feet through retorts are assumed to be charged and pushed by the machinery best adapted to the retorts. The heating of the retorts is assumed to be the best that can be secured in the present state of the art. The retorts have only one stand-pipe. Both the 22-feet through retorts and the 15-feet retorts are charged as full of coal as the best practice would direct; there being no such limitations in this respect as with a retort where the coke cannot be pushed out. The stop-end retorts are also assumed to be charged by machinery, and heated in the best possible manner. The retorts have one stand-pipe, and they are charged as full as the process of withdrawing the coke with a machine rake will allow. Neglecting all personal factors, and assuming that each works is operated under conditions best suited to its equipment; assuming that the same coal is used in the three works, and that this coal is a good grade of gas coal, such as the well-known gas coals of the Pittsburg field, and that the same heats are carried in all three works so that the same yield of gas per pound of coal is secured in each, which may in turn be assumed at 5 cubic feet per pound—what difference of candle power and heat units may reasonably be expected in the finished product of the three works, because of their varying factor of retort lengths, and what are the reasons for this opinion?" The following are the answers given.

Bureau of Information.

From the manner of the statement of this question, any answer thereto must be to a great extent academic, since there are no published data covering a direct comparison of results under the limitations laid down. There is enough exact knowledge of the results to be obtained from Pittsburg coal carbonized in 9-feet stop-end retorts charged by machinery to be able to state with confidence that the best average working under the conditions stated would give a gas of about 15·5-candle power, flat-flame measurement, with a heating value of about 625 B.Th.U. per cubic foot. The relative efficiencies for the through retorts would be affected by the following considerations: (1) Effect on the gas of greater lengths of travel in contact with the heated surface of retort. (2) Modification of the effect caused by reduction in area of gas space due to heavier charges in through retorts. (3) Effect of such heavier charges on the quantity of gas produced.

Taking these conditions in order, all authorities agree that the exposure of coal gas to contact with highly-heated surfaces results in diminished candle power, due to the "cracking" or "breaking-down" of hydrocarbons to other forms, usually with deposition of free carbon. [A long extract from the second edition of Mr. Butterfield's "Chemistry of Gas Manufacture" (p. 72) is here given in support of this statement.] The total loss in heating value due to such cracking is quite small in comparison to the loss in candle power. For example:

$$C_2H_4 \text{ cracked by heat to } CH_4 + C, \text{ or}$$
$$C_2H_6 \quad " \quad " \quad CH_4 + C + H_2$$

would suffer almost total loss of candle power; but the resulting gaseous products would retain all but 30 per cent. of the original heating value in the first instance, and all but 25 per cent. in the second. As a matter of fact, the reactions that actually occur in the breaking-down process are quite complex; but the main effect, as clearly indicated above, sufficiently illustrates the principle involved.

The extent to which a gaseous hydrocarbon will suffer decomposition by contact with surfaces heated to a certain temperature is a function of the time of exposure to such contact; and this again is controlled by the relation of area of surface to speed of flow. In a through retort with two stand-pipes, it always happens that one pipe or the other takes most of the gas; so that the distance through which the gas must travel to reach the stand-pipe would be, for most of the gas produced in the 22-feet retorts, at least equal to the length of travel in the 15-feet retorts. It is reasonable to suppose, therefore, that the cracking effect on the gas would be approximately alike in each case. The heavier charges in the through retorts decrease the area of exposed heated surface as compared with stop-end retorts; and we may safely assume that the increased speed of flow will compensate for the greater length of retort, and so equalize the cracking effect of contact with heated surface that there will be very little difference in quality due to this cause.

As to the effect of heavier charges, experience has demonstrated that small retorts run at moderate heats, and charged by hand with light charges, are capable of giving better results in yield, quality of gas, and quantity of residuals than the larger retorts charged by machinery and run at higher heats. Coal in a thin layer parts with its volatile constituents quickly and uniformly; but in larger masses the heat penetrates slowly to the interior of the charge, with the result that the centre is not well coked, while the parts nearer the heat may be exhausted of gas to an injurious extent. It is an axiom in retort-house practice that the results from two retorts—one too much burnt off and one too little—cannot average-up to the results from two retorts each properly burnt off. This principle applies in some measure to heavy charges, and would result in diminished candle power for the same yield of gas per pound. The final theoretical conclusion to be reached is that, under the condition stated in the question, gas made in either the 22-feet or the 15-feet through retorts will be lower in candle power by probably not more than half-a-candle than gas made in the stop-end retorts, and that the heating value will not be materially different.

There seem to be some practical results which do not bear out the above theoretical conclusion. From results obtained in long through retorts in the vicinity of Boston, it would appear that the gas made therein need not be less in quantity nor lower in candle power than the gas made in the stop-end retorts. Another direct comparison between stop-end and through retorts was made in the West Side (Milwaukee) plant, where, with two duplicate units, maintained independently from the retort to the holder, they ran for a time with one stack of benches operated as 9 ft. 6 in. stop-end retorts, and the other stack, with every other detail exactly the same, operated as 21 ft. 9 in. throughs. They found that, with similar heats and similar charges, there was a slightly lower candle power obtained from the throughs than from the stop-ends; the heating value, however, ranging from equal to 5 per cent. higher. With heavier charges in through retorts, they were apparently able to obtain practically the same results as from the stop-ends, though at times a slight falling off in the candle power was noticeable. It is but fair to the through retorts to say, however, that the men were not able to fill them as full as they should have been filled, due to the character of the discharging machinery which they were then using. In the through retort, used under its most favourable conditions, discharging by pusher and with charging-machines capable of laying a maximum charge in the retort, the condition as to everything but yield should be improved from what practice in Milwaukee actually shows; and it can therefore be assumed that, with the improvement due to shorter time contact between the gas and the heated arch of the retort, practically identical candle power results might be expected—assuming, of course, that both types of retorts were operated to their maximum capacity. There is always more difficulty experienced in burning off the heavier charges employed in the through retorts, and it is found in practice that it is advisable to increase the carbonizing period slightly to obtain equally good results.

So far as the stand-pipes are concerned, it was found, by an elaborate series of tests in Milwaukee, that the gas always went out unequally at the two ends of the retort, but that by using ordinary diligence in keeping the pipes clear the variations in temperature of the gas ascending the two stand-pipes seldom were very great; and the average temperature always was lower than with the stop-ends. At that time they were operating under exactly similar conditions in the adjoining stack.

It does not appear amiss to the Bureau, in answering this question, to call attention to the great practical advantages to be derived from the use of through retorts—viz., simplification of the machinery, the ability to use types of machinery which do not leave the retorts open at all, the greater ease of decarbonization of the retorts and patching them when necessary, the smaller investment for bench ironwork, decreased hydraulic main maintenance, greater output per given area of land or of retort-house, the carrying out of the coke on one side of the stack, cutting down the expense of installation and of handling and keeping coke, keeping the resultant smoke, coke dust, and steam away from the side of the stack on which the operating machinery is located,

and the material reduction in the number of men required to operate the benches.

Answer by Mr. Frederick Egner.

In this question you have briefly, but comprehensively, described three styles of retort-houses, limiting the operations and results closely, and leaving nothing to be answered but, "What difference of candle power and heat units may reasonably be expected in the finished product of the three works, because of their varying factor of retort lengths; and what are the reasons for this opinion?"

While in the course of my practical life I have had charge of operations of coal-gas works ranging from one with only two settings of "threes," making not more than 18,000 cubic feet of gas per 24 hours from very poor Missouri coal, up to works with 840 retorts in action, using good Pennsylvania gas coals and with direct-fired, generator heated, and recuperator furnaces, and some with stoking machinery, I have had no experience in three such works as are described in the Bureau's question; and only one who has had this experience could possibly answer the question with some degree of certainty. I have, of course, visited and talked with men who have operated one or other of the types you describe and have found that "doctors differ" in their opinions on the subject, and with considerable vehemence assert their point of view.

Your question is, as I see it, purely a theoretical one, which, because of the reasons I have given, I feel unwarranted to venture to decide. But, if you will permit me, I beg to say that, in view of the now well-demonstrated fact that all our old knowledge relating to what is going on in a retort where coal is being coked and gas evolved is a knowledge of what has been—but better had not be continued to be—done, it appears a mere waste of valuable time to speculate upon the question submitted to your Bureau.

I now refer to the clear, thoroughly established results with the vertical or standing retort system, as first operated at Dessau, then Berlin, Cologne, and many other cities, where it is shown that, with a retort-house occupying no greater ground space, and costing not much more, and with a retort system alleged to cost no more per unit of gas produced, the results are: (1) Better gas from the same kind of coal; (2) better and more coke; (3) better and more tar; (4) more ammonia, from 35 to 55 per cent.; (5) 50 per cent. less sulphur compounds to be removed from the purifiers; (6) no naphthalene at all; (7) no stopped stand-pipes; and (8) the utmost possible economy in labour. As by reason of the difference in the position of the retorts, and the consequent difference in the chemical changes going on in the vertical as compared with the horizontal retort, these magnificent results are obtained, I think it a waste of time to discuss the horizontal retorts in any shape with or without machinery, for large, medium, or small works; and the sooner all concerned will wake up to these facts, the better for gas companies and their stockholders.

The Retirement of Mr. Henry Hack.

At a crowded meeting of the workmen and staff held on the 12th inst., at the Swan Village works of the Birmingham Corporation Gas Department, the following resolution was unanimously passed: "To Henry Hack, Esq., M.Inst.C.E.—We, the staff and workmen of the above works, wish to tender you our sincere and hearty congratulations on your retirement from the department as Engineer-in-Chief, after a period of 36 years' faithful and energetic service, during which time the works have been brought, under your supervision and guidance, to a very high state of efficiency. We shall always remember with pleasure the courteous consideration you invariably showed to us whenever we interviewed you on anything connected with the carrying on of the works, and the very great precautions you always insisted on, for the prevention of accidents. We assure you, Sir, that our interest in the work of the department will be continued with none the less zeal in the future, than in the past; and we earnestly hope that in your retirement you will have such health as will enable you to enjoy the rest you so well deserve."

Waverley Association of Gas Managers.—The 92nd meeting of the Association is to be held at the Edinburgh Exhibition Concert Hall on Friday, the 5th prox. The President, Mr. Thos. O'Neill, of Dunbar, will give a short address, which will be open to discussion by the members, who, after dinner, will have an opportunity of viewing the exhibition.

Flameless Combustion.—In a recent number of the "Comptes Rendus," M. Jean Meunier dealt with the subject of the combustion of gases in a spirit lamp in which the flame was spread by a metallic disc serving to mix the spirit and air, and a rod of metal running up the central cylinder. When the perforated disc got red hot, the flame died down. The author showed that the flameless combustion of gases and vapours is localized at the surface of the disc, and the combustible gases are collected round it. When a lighted match is brought near the rod of metal, the flame at its extremity is attracted by the flame of the match. This seems to show that gases have a certain cohesion, and will rise along a rod of metal without mixing with neighbouring gases, as if they were protected by a solid envelope.

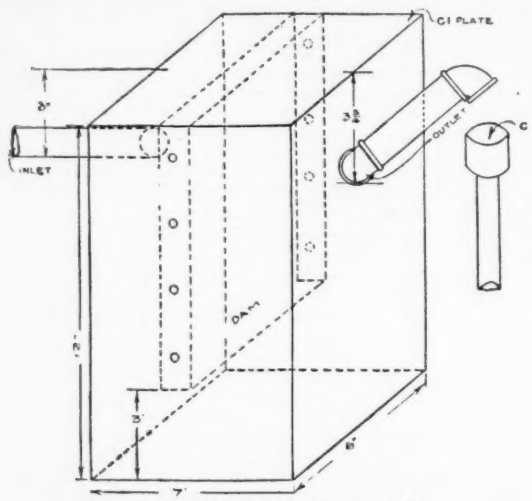
AMERICAN VIEWS ON RETORT-HOUSE PRACTICE

In the "JOURNAL" for the 28th ult. (p. 231), we gave some extracts from a paper on "Retort-House Practice," read by Mr. W. E. HARTMAN, of Joliet (Ill.), at the last annual meeting of the Illinois Gas Association. The following are some points brought out in the discussion upon the paper.

The first speaker was Mr. Honberger, who emphasized very strongly the suggestion made by Mr. Hartman in regard to the accessibility of the hydraulic main for cleaning, and also as to the use of two openings for taking off the ammoniacal liquor and the tar. He said that at Peoria they had an automatic arrangement similar to the one described by Mr. Hartman, though it was difficult for him to say that their seal had been made any steadier by its use. If anything, it had been subject to greater variation than when they had the old-style overflow and seal-pot, and drew off the tar by hand. They found, when the vacuum was changed by the exhauster engine failing to take up the load properly, due to some obstruction in the apparatus, that the seal was thrown out, and there was no possibility of making it up without refilling with fresh water or pumping liquor. To do away with the trouble of an unsteady seal, they brought into use an equalizer on the overflow-pipe; but this had diminished the trouble only in a measure. As a suggestion, he might add that the use of an old-style seal-pot in connection with the tar settling-tank would in all probability do away, at least to a very great extent, with the trouble of an unsteady seal. There was great room for improvement in the hydraulic main, especially in the pockets and openings provided for cleaning and removing obstructions; and he thought they must all agree with Mr. Hartman when he said that "the hydraulic main should be easily accessible." With regard to the author's remarks as to heating-up new benches, he (Mr. Honberger) might say that, after drying-out theirs, they found that the best results were obtained in the life of the bench by having just sufficient heat to make between 9000 and 10,000 cubic feet of gas per retort; continuing this practice for forty or fifty days. By this time the settings and retorts were thoroughly seasoned, so to speak, and they had practically no trouble with sagged retorts. After the bench had been once adjusted to the proper heat, it was, as Mr. Hartman said, unnecessary to tamper with the air-slides and the damper. They had a stack of seven benches of nines in use for eighteen months without touching the dampers or air-openings. It had been necessary to scurf the retorts at intervals of six weeks, using an air-blast under 6 inches of water pressure—the blower being operated by a motor. With smaller plants, it was a question of economy whether or not it was cheaper to use natural draught, a steam-jet, or other similar contrivances for removing the carbon. He had found the air-blast very satisfactory.

Mr. Rhoades, of Springfield, remarked that, though Mr. Hartman's paper recorded the experience of people using benches of nine retorts, he thought, in most cases, those who had benches of six, or even of four, would find that the main points of the rules laid down by the author in regard to operation could be followed. So far as construction was concerned, he (Mr. Rhoades) considered that not one assailable subject had been adduced. The author had raised a good point in regard to the durability of benches when he insisted upon thorough work being done in the foundations and setting of his retorts and the blocks to support them. He (Mr. Rhoades) had had experience with cracks filled in with fire-clay to take the place of the solid joint; and in every case he found it impossible to make the clay fuse with the brick in order to hold up the retorts or the furnaces, which resulted in the former dropping from 4 to 6 inches as the setting settled down. The last benches that were built for them he watched very carefully, and wherever the joints were large, or would require from a half to three-quarter inch joint being made-up of fire-clay, he insisted upon the masons cutting out of these setting-blocks at least 1½ or 2 inches, so as to insert a piece of fire-brick, and in this manner make a solid joint. They hoped this would do away with any sagging of the retorts, and lengthen the life of the bench; for the sagging caused by placing such a strain upon them was one of the things that caused them to crack and create troublesome holes. With regard to the size of the retort and the charges, he was very glad Mr. Hartman had brought out these points. At Springfield they started with a charge of about 300 lbs. in a retort 15 in. by 26 in. by 9 ft.; and he did not think anyone ever had more trouble with stand-pipes and all the other kindred ills than he had. Consequently, he immediately went to work to find out what was wrong. He tried large charges, to see whether he could cool down the gas; but he found that the larger the charge the less trouble he had (exactly as mentioned in the paper). Therefore they were now charging 375 lbs., or only 5 lbs. less coal than Mr. Hartman used in his 16 in. by 28 in. by 9 feet retorts. As they were working 15 in. by 26 in. retorts, the members could very easily calculate the difference in area for carbonizing, and see that the retorts at Springfield were rather fuller than Mr. Hartman's. But his idea was perfectly correct. The nearer they could get their retorts full, the less trouble they would have with lamp-black, naphthalene, and tar in the stand-pipes. When it came to the hydraulic main, he should like to add that if it was possible to change its shape so that the lamp-black would be allowed to pass out at the back, where large hand-holes could be utilized in taking it out, a great deal of trouble in the stand-pipes through the backing-up of the gas upon the retorts could be done away

with. He would suggest that from a point just below the dip-pipe the hydraulic main should have a slanting curve to the back side, rather than that the dip-pipe should drop into the centre of the circle, so that the heavy tar from the dips would gradually slip back to the cleaning-holes. What the author had said in regard to the old-style equalizer or overflow for the hydraulic main he could fully endorse, for only a few days previously he took off an equalizer they had not used for two years, broke out the cast-iron parts inside, leaving only the shell, and attached an 8-inch pipe for the tar overflow. The only good point about the equalizer was that it was at least 4 inches below the bottom of the hydraulic main; so that tar flowing from the main was practically at the bottom. In this connection, he should like to bring forward the subject of the double overflow—one for the hydraulic main liquor and the other for the tar. This was mentioned in connection with seals of ½ to 1 inch. They were doing things differently in his works as compared with some other places—following the ideas they had seen carried out at various times. He was now using only 1-10th inch seals on the dip-pipes, and had run for weeks at a time with the water just at the mouth of the dip-pipe. Their conditions were rather peculiar. They had a long hydraulic main, with six settings in the bench, using three settings at one end, and the gas travelled the entire length of the main and then through 150 feet of foul main before it reached the other portions of the apparatus. They found the friction on the gas moving this distance amounted to 1-10th of an inch—in other words, when carrying 1-10th of an inch suction on the exhauster they would still be carrying no suction on the mouth of the dip-pipes. Therefore, he carried the seal just to the dip-pipe, and the exhauster ran perfectly level—with no suction at all; and he had never had better success in respect of the illuminating power of the gas than with this method of working.



C. Cup with pipe to seal-pot or well.

Device for Preventing Fluctuations of Level in the Hydraulic Seal.

The next subject taken up by Mr. Rhoades was that of the fluctuation of the seal; and he stated that they had obviated this by using a little contrivance which would almost entirely eliminate fluctuation. Of course, if they were carrying 1-10th inch dip, as the gas bubbled through the liquor there was always a movement of the water on the top. He took the opening on the side of the hydraulic seal-box, which was flat, at exactly ¼ inch below the level of the dip-pipes inside, so that the surface of the liquor above the opening might be in motion; and liquor passing through a 2-inch opening is not agitated to any great extent. The liquor passed into a small cast-iron box, 6 in. by 7 in. by 12 in., with a dam-plate from the top to within 3 inches of the bottom, directly across the path of the liquor, and solid with the sides of the box. [See illustration.] This sheet caused the liquor to flow down and under, making a 6-inch seal, which, again, had the effect of stopping the vibrations of the surface. On the side of the box opposite to the inlet, an outlet opening was made ¾ inch below the level of the inlet opening, which sealed the outlet and again broke up the vibration. The outlet was a 1-inch pipe, which could be raised or lowered to produce the required level in the mains. "This device," said Mr. Rhoades, "practically eliminates fluctuation in the main, is not troubled with tar, and when the exhauster is running at level gauge no air is taken in through the open mouth-pieces. The beauty of this system is that you have no back-pressure upon your retort while the gas is being made, which brings out the idea so well given by Mr. Hartman, that if you have no pressure at all, and the gas passes out freely, and does not come in contact with the hot surface, your candle power is higher, on account of carrying higher hydrocarbons, and the retort is doing better work with less trouble. So that I think we have solved this problem of the fluctuating main for our works." With regard to the exhausters being set so that they would carry an even pressure, Mr. Rhoades said he was certainly fortunate. He had attached wide open on his exhauster a gauge, the width of the line of which would not be as great as that which a blunt lead pencil would make on passing it over paper, simply following the circle of the chart. All one had to do to be satisfied that it was working properly was to speed-up the exhauster a little, and the pen would move. They had been very fortunate in this respect; and it was one reason for keeping the seal so very low, with such good results.

At this point, Mr. Rhoades was asked if he would tell the meeting why others had had so much trouble with the fluctuating level, and what the exact difference was. He replied as follows: The trouble with a double overflow coming directly from the hydraulic main and the outer tank, as given by Mr. Hartman, I think you will find is this: You have tar displacement, and the water displaced by tar will rise and give a certain level through the main. Supposing the exhauster should from any cause stop, that would at once put the pressure upon the main and throw out more or less of the liquor. This lowers the level of the main when it settles back, as the exhauster takes off the load. If you are not pumping liquor through the main, you must depend on condensation to make up this loss, which requires time, and gives a changing seal for a considerable period, which is always to be avoided. Fresh charges going in, when a deep seal is carried, will produce this extra overflow before the exhauster can adjust itself. The low seal relieves this; for the exhauster will take the load at once, not being burdened with the added load of the seal. Along with our overflow system, I have conditions which will allow the pumping of liquor from the ammonia well to a tank placed on top of the primary scrubber, or at a height of about 30 feet. A lead from this tank goes to the top of the T-pipe leading into the tar-tank. A valve on this line is adjusted so as to allow about a ¼-inch stream of water to flow continually. This will replace the lost liquor, and adjust the seal quickly. We had trouble when we were carrying ½-inch seals, just the same as others, when heavy charges were put in and the gas was coming out rapidly—bubbling from this cause producing fluctuation of the seal, as it churned from one end of the main to the other, so great that I have seen it churn out through the overflow, the full size of a 2-inch pipe. The device mentioned will overcome this. As to levelling the main, nothing will give the superintendent of the retort-house trouble so quickly as to have the dip-pipes of an entire retort-bench of different lengths. They may have been placed all right at first, but when you have a ¾-inch seal on one or two dips, and have gas coming back on others down the line, you may be very sure you will get little or no gas from those that are sealed, and draw air in at the others. We had a condition which would not allow us to level the main as it stood. It is an old cast-iron main, badly sagged, and in such a condition that we were afraid to jack it up to make it level. In order to level-up the dip-pipes, I simply bored a hole in the side of the main, which would bring the water within 1½ inches of the bottom of the dip-pipes, shut off the bench entirely, stopped making gas (of course, we had the water-gas plant to fall back upon), took out all the dip-pipes, and, when the water was level, measured the distance from the shoulder on the hydraulic main to the water, and brought all the dip-pipes to the same level. Since then we have had no trouble at all.

On the subject of cleaning fires or clinkering, Mr. Rhoades said he could not quite agree with Mr. Hartman when he said that he could let his coke-fires go for three or four days without clinkering. This might be very well for settings of nine; but if they were carbonizing 375 lbs. of coal, they must have every particle of energy they could crowd into the setting almost up to the refractory limit of the fire-clay material, and they were bound to make clinkers in the fire-box. They had tried to let it go over two days, and in each case they had drawn out every bit of fire in the fire-box, so thick were the clinkers. He, therefore, insisted that his men should clean the fires twice a day—each man cleaning on his own shift, and breaking up the fires in between. In this way they did not have the trouble of the clinkers forming so as to preclude the passage of the air through the fire-box; but they did have a good hot fire from the grates to the top.

Mr. Rice, referring to the author's remarks about recuperation paying, said this, of course, was old; but it could well be emphasized. The benches at Joliet of which Mr. Hartman had charge carbonized 10 tons of coal each per day, and a difference of 1 lb. of fuel for each 100 lbs. of coal carbonized meant in three years (which might be taken as the average life of a setting) 110 tons of coke for each bench, which at $4 a ton was $440. Assuming 17 lbs. of coke per 100 lbs. of coal carbonized as a fair result for half-depth, and 14 lbs. for full-depth benches (and the benches at Joliet worked on 14 lbs.), there was a difference of 3 lbs., which meant $1320 per bench in three years; and if the benches run longer than three years between fillings, it was still more. This sum was nearly twice the cost of refilling a bench of nines from the top of the recuperators, and was more than the cost of refilling from the top of the ashpan.

Mr. Russell said the point made by Mr. Rhoades—of having a piece cut from a block, so that a solid piece of material could be put in instead of having a large joint—was very pertinent. There was absolutely no excuse for large joints in fire-brick work. As to the arrangement of hydraulic mains which Mr. Rhoades had submitted, he (Mr. Russell) might say that many designs had been made to do just as he had suggested—in other words, that sloped backwards. It had been found, however, that when pitch was made it was in the retort, and when it was deposited, if it was pitch, it would not slide. A main should, of course, be designed so that all the parts could be reached easily and readily through

openings at the back. If the material deposited was not pitch, it would flow to the end as well as the rear. This was facilitated by pumping a stream of water, or preferably liquor, through the main. Many gas engineers required that each section of main over each bench should be separate from the other. It was therefore very difficult in such instances to take off the tar properly from each section, as must be done by a pipe system; and this was never, in his opinion, good practice. If it was advisable to have each section of the main separate, so far as taking off the gas was concerned, this could be easily accomplished by putting in a division-plate extending from the top down to (say) an inch below the bottom of the dip-pipes—or possibly 1½ inches, so as to leave plenty of space below; thereby taking the gas off each section, the tar passing off at the bottom. The liquor seal would be maintained at the proper level by the off-take device. With reference to the remark made by Mr. Rhoades as to the difference between his system of clinkering or cleaning fires and that of Mr. Hartman, it was only on account of the depth of the furnaces. There was no question about a full-depth bench being the better. A so-called three-quarter depth bench was an improvement over a half-depth bench; but the latter had been a life-saver to the small gas maker. It would have been impossible for many of the small works to put in full-depth benches, because it would have necessitated the alteration or the rebuilding of the retort-houses. He thought that there had been a great deal of misconception as to what a recuperator setting really was. Many gas managers would say that they had half-depth, full-depth, or three-quarter-depth benches, whereas it might be only in the height of the floor level, and when one examined the bench it would be found that really in some instances it had practically no recuperation whatever.

In replying to the remarks of the various speakers, Mr. Hartman said he wished to support the suggestion made by Mr. Rhoades that some improvement was needed in hydraulic mains, which, as now constructed, it seemed to him were not at all well adapted to their work. Mr. Rhoades proposed to pump ammoniacal liquor from the well through the hydraulic main. He (Mr. Hartman) objected to this method, as the hydraulic main was a fertile source of fixed ammonia; and in pumping liquor through it they would increase the percentage of fixed ammonia. He had found this to be so by analysis. Possibly the difficulty might be overcome by pumping over and over again the liquor from the hydraulic main itself, and not allowing it to mix with that from the rest of the plant. He was rather surprised at the practice of scurfing every three or four weeks, with a seal of only 1-10th inch on the dip-pipes. It was certainly very desirable to be able to run with this seal; but he could not expect with it to decompose so much of the hydrocarbon, with the resultant formation of free carbon, as to require scurfing so frequently, even with a charge as large as 375 lbs. in a 15 in. by 26 in. retort. Reference had been made to the practice with vertical retorts as not being on a sufficiently firm foundation to warrant the quoting of results; but it appeared to him that foreign engineers had produced results in this connection, the value of which could not be ignored. They had had vertical retorts in use long enough to establish results that were certainly to be admired; and it could not be denied that there was something good there. Probably there were some mechanical difficulties to be overcome; but it looked encouraging to the gas fraternity.

Mr. Rhoades explained, in regard to the scurfing of the retorts every four weeks, that they had not to do it in order to get coal into the retorts. They had to run them as long as ten weeks—in one or two instances it was nearly three months; but, on the other hand, they found that if they scurfed about every four weeks they obtained better results than by letting the retorts go for a longer period. It was only a case of a difference of opinion.

Accident in Repairing a Retort-Setting.

Dr. Leybold, of the Hamburg Gas-Works, reported in a recent number of the "Journal für Gasbeleuchtung" a curious accident which occurred at a gas-works towards the end of 1906, due to an explosion of gas while a retort-setting was in course of repair. The foreman was engaged with two bricklayers in repairing a setting of nine retorts. The setting itself was cold; but the adjoining settings were in action. A bricklayer was working with a colza oil-lamp in the left-hand retort, in the middle row; and two other men were also in the arch of the setting. The left-hand middle retort had been broken through and was being repaired. The men had been a few minutes at their work when an explosion occurred, and flame proceeded from the retort mentioned. The explosion spread into the setting, and could only have been caused by ignition of coal gas at the naked lamp-flames. The men sprang out of the setting; the bricklayer working in the retort being quickly pulled out. But he was found to have suffered considerable burns. One of the other bricklayers also received injury by burning, resulting eventually in serious damage to the retina of the eye. Investigation showed that the coal gas must have found its way into the setting from the hydraulic main through one of the ascension pipes. The exhauster had been working slowly for a few minutes, so that the pressure increased in the hydraulic main. The dip thus failed, and gas escaped through the left-hand ascension pipe into the retort which was in course of repair, and then into the arch of the setting, where it became ignited by the oil-lamps. The accident would have been avoided if the lid of the dip-pipe had been left open.

REGISTER OF PATENTS.

Distillation of Coal. The "Coalite" Process.

PARKER, T., of Chapel Street, Edgware Road, W.

No. 1972; Jan. 25, 1907.

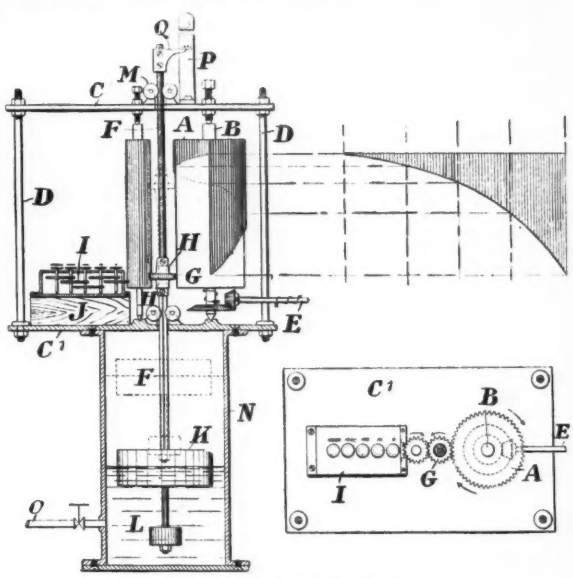
This invention relates to the distillation of coal and other carbonaceous substances, and has for its object "to provide simple and effective means for the production in large quantities of a partially coked fuel according to the process described in patent No. 14,365 of 1906," which was dealt with in the "JOURNAL" for Oct. 8 last, p. 95. The present specification is abstracted elsewhere to-day—see p. 501.

Meter or Measuring Instrument.

LEA, J. E., of Manchester.

No. 8407; April 11, 1907.

This invention relates to the measurement of liquids or gases as to quantity and mechanical forces in regard to time and intensity. It refers to measuring instruments where rotary drums are employed, which, in conjunction with a certain formation of surface and a small roller and lever, "bring about the intermittent rotation of a pinion, which, in turn, operates an arrangement of counting mechanism—the rotations of the pinion being proportional to the 'rates of flow' of the quantity to be measured per unit of time." The object of the invention is to dispense with the roller and lever arrangement, and generally to simplify the construction of the instrument.



Lea's Measuring Instrument.

According to the invention, use is made of a vertical metal drum A, designed to rotate horizontally; its axis B being mounted between the two plates C C¹ by fixed and adjustable centres, as shown. The plates, together with rods D, constitute the frame of the instrument. Upon the surface of the drum are a number of small elongated teeth, which lie parallel to each other and to the drum. They are of even size transversely, but longitudinally differ in length—the variations of length being determined as hereafter described.

Upon the drum axis is fixed a bevel wheel, meshing with which is a small bevel pinion carried by a spindle E of a clock or other suitable motor (not shown), which will rotate the wheels and drum at a uniform rate. Also mounted adjustably in centres between the plates C C¹ is a long pinion, which in length equals the drum. Passing through holes in the plates C C¹, and arranged, by preference, at a point directly between the drum and the pinion, is a long spindle or shaft F, loosely mounted upon which, between adjustable collars H, is a pinion wheel G, the teeth of which constantly mesh with the teeth of the long pinion. The teeth on all these parts are of equal pitch.

The first or units wheel of an ordinary revolution counter I is mounted horizontally upon a block J, and fitted with a dial-plate marked with degrees of measurement, and the axes of the wheels carrying pointers for each of the dials. The spindle F near its lower end is fitted with a float K, and (if desired) with a balance-weight L. At points immediately above the plates C C¹ are guide-rollers; the lower ones being formed with V-grooves in order to fit the spindle F, which, at its lower end (between the float and pinion wheel), is of square cross-section, and thus prevents the spindle turning round, while allowing it to move freely up or down.

In order to measure the quantity of liquid discharged from (say) a tank either over a weir or through an orifice, the action of the instrument is as follows: The float is placed either in the tank out of which the liquid is flowing or in a separate chamber N connected with it by a pipe O. As the level of the water rises or falls, the float imparts a movement to the spindle F in a vertical direction; and in thus moving up or down it raises or lowers the pinion-wheel G to various positions in relation to the long pinion and the drum. Prior to use the drum will, of course, be set in motion at a uniform speed (say) at one revolution per minute. With the drum rotating, and with its teeth formed as described, it will impart a rotary motion to the pinion-wheel G, varying in amount with the height of the wheel; and,

proportional to the rates of flow of the liquid, it will cause the counter to be rotated to an extent corresponding to the amount of water passed in any given time.

The rate of flow of a liquid or gas in relation to the movement of any object, such as a float or valve, acted upon by the liquid or gas, may be represented by a curve obtained by setting out a diagram with ordinates and abscissæ, in which the ordinates represent the movements of the float and the abscissæ the rates of flow corresponding to the float movements. Such a curve is used in setting out the length of the teeth on the drum A, and is shown in the diagram. The teeth on the drum are made to such lengths and in such numbers as to cover the drum to an extent equal to the area enclosed between the curve of the diagram, the line representing the vertical axis of the diagram, and the line (drawn parallel to the horizontal axis of the diagram) which represents the maximum rate of flow—the circumference of the drum being made equal to this last line. The formation of the curve will vary according to the ratio between the rates of flow of the liquid or gas; and the movements of the float are directly proportional to each other or otherwise. When the plain parts are opposite the pinion-wheel G, the latter will not be rotated, although it is free to move up and down—the long pinion allowing of the movement. As the number of teeth upon the drum at any height measured from the bottom of the drum are proportional to the rate of flow corresponding to the rise of the float from zero to such height, the revolutions of the counter during one minute are at all times proportional to the rate of flow, and thus the total number of units passed are counted.

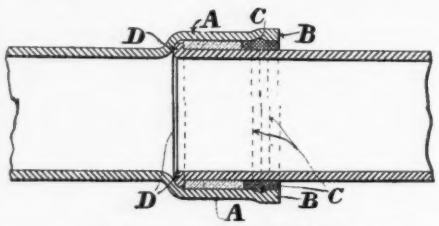
The instrument may be used in conjunction with those described in Patents No. 3000 of 1905 and Nos. 4961 and 6454 of 1906; and in such connection the "slider-rod" of the former inventions may be extended and adapted to carry the pinion-wheel G of the present instrument, and the drum A may be mounted horizontally instead of vertically. In these cases, the curved edge would, of course, be regular, owing to the rectified motion of the slider-rod.

Coupling-Joints for Welded Metal Pipes.

CLAYTON, L., of Hunslet, near Leeds.

No. 9003; April 18, 1907.

The end of one of two tubes to be joined is formed with a socket A, whose outer edge B is thickened-up or made of a thickness greater than that of the tube itself; and an internal V-shaped annular recess C is formed in the socketed part of the tube at the base of the thickened-up portion, while the end of the other tube is thickened-up at its edge so as to form an annular enlargement or bead D, the outer diameter of which is made slightly less than the internal diameter of the socket (an easy fit therein), and the end face of the bead is rounded, or made convex, so as to fit against the internal curved shoulder of the socket



Clayton's Joint for Welded Pipes.

The tube with the beaded end is placed within the socket of the other tube; the operation of putting the tube in position being facilitated by the bead, which acts as a guide and keeps the tubes in alignment. The bead further strengthens the tube, and also forms a stop for the yarn afterwards passed into the joint; the internal V-shaped recess in the socket forms a key for the lead; and the thickened-up edge of the socket has the effect of "making it perfectly rigid to resist the pressure when caulking-in the lead."

Inverted Gas-Burners.

M'LEAN, J. H., of Edgbaston, PHELPS, F., of Bournville, Worcester, and RAYBOULD, A., of Smethwick.

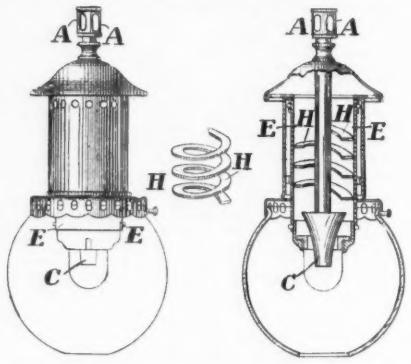
No. 9973; April 30, 1907.

This invention has for its object the prevention of dust or foreign matter or carbon in a finely-divided state from falling into, and collecting in, the mantle in inverted gas-fittings, by employing a collecting helix in the cylinder enclosing the mixing burner-tube and in (in conjunction therewith) a dust-receiving nosepiece at the extremity of the mixing-tube. Arrangements are also made for enabling the parts being readily detached for cleaning or other purpose.

As shown, at the lower extremity of the mixing-chamber A is a nosepiece C, for evenly distributing the heating gases to the mantle, so as to ensure regular heating of the latter in the usual way. But the nosepiece is formed in a special manner to equip it for other purposes than this ordinary use. It is formed as an inverted truncated cone of such size that the diameter of its circular base is not less than the internal diameter of the mantle. It is further adapted to catch and retain falling dust, so as to prevent it entering the mantle.

Around the mixing-chamber is an open-ended cylinder E, forming a flue for the escape of the hot gases and products, and keeping them from mingling with the air admitted to the neighbourhood of the mantle to support the combustion of the gas at the burner. The cylinder is detachably mounted, and is surrounded by an outer casing with a hood at the top.

The main dust obstructing and collecting means comprises a helix H (of flat tape or strip) housed in the cylinder E, and permanently or detachably connected to it so that it can be inserted into, or removed from, the fitting with the cylinder. The helix is formed from suitable metal or material of a width to at least equal the annular space between the outer edge of the base of the conical nosepiece and the internal contour of the cylinder, so that the helix provides a successive series of surfaces covering the space (which is the open way to the interior of the mantle) and preventing the passage of any dust into it. More than one



M'Lean, Phelps, and Raybould's Inverted Gas-Burner.

spiral may be used, or the space may be divided by means of distance-pieces, either perpendicular or in spiral form, so as to form more than one flue.

With this construction a very effective light fitting is said to be provided—"particularly useful for outside lighting, as the helix acts as a down-draught check to some extent."

Carbonizing Coal.

CARPENTER, C. C., of the South Metropolitan Gas Company, Old Kent Road, S.E.

No. 14,371; June 21, 1907.

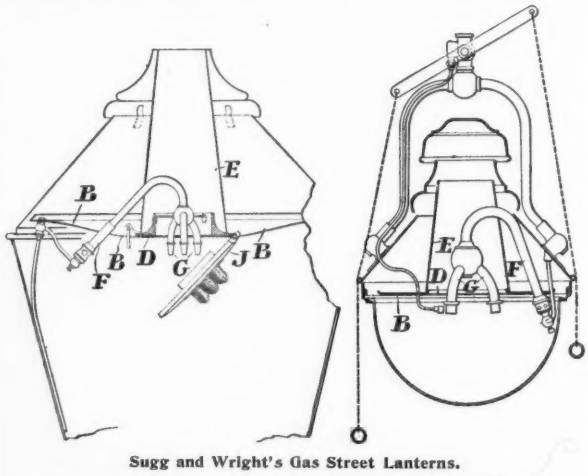
A full abstract of this specification appears on p. 496.

Street Gas-Lanterns.

WILLIAM SUGG AND COMPANY, LIMITED, and WRIGHT, E. S., of Regency Street, Westminster, S.W.

No. 19,478; Aug. 30, 1907.

This invention has reference to gas-lanterns with inverted incandescent mantles. In all such cases, the patentees point out, "it is important to provide ready means for enabling the admission of air and gas to the mixing-tube of the burner, to be regulated, if necessary, while the lantern is in use. Owing, however, to the inverted position of the burner and the height at which these lanterns are sometimes placed, there is some difficulty in arranging the air and gas inlets to the mixing-tube in an accessible position, so that they will not become too hot to be handled by reason of the products of combustion passing up the flue." According to the present invention, the lantern is so constructed that the inlet to the gas and air mixing-tube is beneath the reflector; so that it is readily accessible from below, without opening the lantern at the top or taking off the top.



Sugg and Wright's Gas Street Lanterns.

The lantern has a reflector B with a central aperture in it; the ring D surrounding the aperture serving to support the conical flue E. F is the mixing-tube, passing upward through the reflector and inclining inwards and downwards towards the central aperture, where it is connected to the inverted burner G, which is supported by radial arms from the ring. Where the air enters the mixing-tube, there is the usual perforated ring, which can be turned to regulate the inlet capacity for air through the holes in the mixing-tube; while a screw regulates the supply of gas to the tube. Both ring and screw are in such a position that they are readily accessible, and are also so placed as to be unlikely to become hot and incapable of being handled as where the supply of gas and air is delivered as usual from above. To the ring D is hinged a disc J having apertures to receive inverted mantles, so placed as to come opposite the branches of the inverted burner G.

The modification shown is the same as that already described in all essential particulars. The disc J is, however, absent, and the mantles are fitted on the branches of the burner direct.

Gas-Ovens.

WILSON, J. W., of Armley, Leeds.

No. 24,423; Nov. 5, 1907.

This invention relates to a device whereby two temperatures may be obtained in one gas-oven, or the size of the oven decreased, as required, without the aid of special shelves—the ordinary baking shelves being the only ones required. Further, a portion of the device, when in use, locks its shelf in position, and alters the normal condition of the oven; the shelf being retained in position so long as the device is performing its functions. The shelf cannot be withdrawn until the device is in its original position, leaving the oven in its normal condition, "and so prevents any forgetfulness on the part of the user." The position of the operating handle indicates the position of the device.

The patentee's proposal is dealt with in an article appearing on p. 494 of to-day's "JOURNAL."

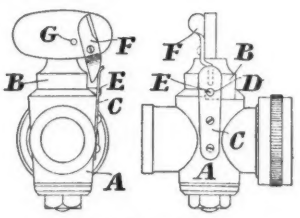
Self-Locking Taps.

TREEN, J. C., of the South Metropolitan Gas Company, Old Kent Road.

No. 2401; Feb. 3, 1908.

This invention has reference chiefly to gas-taps, which are provided with means for locking the plug or holding it from turning accidentally or when not required.

The illustration shows the tap fitted to a gas cooking-stove, but turned off and in its locked position.



Treen's Self-Locking Tap.

To the side of the body A is fastened a locking spring C. The plug B and a spring C are constructed to snap into engagement so as to hold the plug against rotation when turned off. The spring has a hole D in it at the same level as the stop-pin E of the plug; so that the pin catches in the hole and locks the plug when in the proper position. To disengage the spring from the pin, a rocking piece F is pivoted on the fan key of the plug, and with its end bearing against the spring G is a stop to limit the rocking of the piece F and prevent its straining the spring.

When the tap is to be turned from the locked position, the piece F is rocked on its pivot and its end caused to lift the spring C, which is thereby cleared from the pin E of the plug, so that the latter can be turned in the ordinary manner. The unlocking of the plug and the turning of it is easily effected in a single motion of one hand. In turning the tap in the opposite direction the rocking of the piece F is not necessary, as the pin E will push back the spring and automatically engage itself in the hole D.

APPLICATIONS FOR LETTERS PATENT.

10,155.—SCHMATOLLA, E., "Firing of retort furnaces." May 11.
10,212.—HOWORTH, F. W., "Valves." A communication from the Aktiebolaget Gasaccumulator. May 11.
10,223.—GRAETZ, M., "Nozzles for inverted lamps." May 11.
10,233.—SIMONINI, A., "Mantles." May 11.
10,265.—ADAMS, M. J., "Meter." May 12.
10,284.—SHAW, E. J., "Inverted burners." May 12.
10,295.—KELLY, W. V. D., "Gas-burners." May 12.
10,307.—BOWING, J., "Retorts." May 12.
10,321.—ZECHNALL, L., "Inverted lamps." May 12.
10,324.—WALLER, E. B., "Compressors and exhausters." May 12.
10,335.—DONNELLY, S. H., "Tapping mains under pressure." May 12.
10,380.—BERNHEIMER, J., GUT, A., and MELDER, A., "Holders for mantles." May 13.
10,391.—HUNTER, C., "Gas-ovens." May 13.
10,422.—RINCKER, F. G. C., "Obtaining tar gas." May 13.
10,442.—BURSTALL, F. W., "Centrifugal pump for the extraction of tar or dust from gases." May 14.
10,443-4.—BURSTALL, F. W., "Gas-engines." May 14.
10,450.—GORDON, A., "Suction gas plant." May 14.
10,467.—ADAMS, M. J., "Taps and valves." May 14.
10,501.—WALLER, E. B., "Bye-passing arrangement for gas-making plant." May 14.
10,506.—PARSONS, C. A., and HOWE, R., "Steam or gas turbines." May 14.
10,518.—DRACH, J., "Thermostatic regulators." May 14.
10,532.—MACHLET, W. A., "Preparation of carburizing gas." May 14.
10,558.—MORGAN, W. H., DENSLEY, J., GRAY, H., WALDUCK, H. J., and GEERING, G., "Manufacture of coal, water, or oil gas or combinations or mixtures of the said gases." May 15.
10,595.—SUGG AND CO., W., LTD., and WRIGHT, E. S., "Anti-vibrators." May 15.
10,601.—BERLIN-ANHALTISCHE MASCHINENBAU ACT.-GES., "Conveyors for incandescent material." May 15.
10,613.—WEBBER, J., "Inverted fittings." May 15.
10,650.—WESTGARTH, T., and TAYLOR, L., "Gas-burners." May 16.
10,671.—PHILLIPS, T. B., "Pumps for clearing gas-pipes." May 16.
10,688.—ACTIEN-GESELLSCHAFT SCHAEFFER AND WALCKER and SCHULTZE, W., "Inverted lamps." May 16.
10,715.—BRÖNDUM, M. W., "Igniters and extinguishers." May 16.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Right and Left Hand Valves.

SIR,—Anyone who is familiar with the working of steam-plants would not hesitate for a moment in operating a stop-valve, as these invariably shut with the sun and open against it. I believe, however, the majority of gas-valves work in the contrary direction.

The main thing is that all gas-valves should be operated in one direction and all steam-valves in one direction. My friend, Mr. Drury, has achieved perfection in arranging both steam and gas valves to be operated identically; and this is undoubtedly the best course, though I am not sure that it is absolutely essential.

CHARLES CARPENTER.

May 25, 1908.

SIR,—I feel surprised at the nature of the correspondence in your recent issues as to right and left hand gas-valves.

It is a very long time ago since I understood that it was a settled arrangement that all rack-and-pinion valves for gas-works or street-mains should go with the sun, in the turning of the key while opening, and the reverse while closing. It is the most simple, the most natural, and the easiest to remember; and all valves I have had to do with, I obtain so.

Regarding steam and water, these are not in the present question, and may be left to the understood method of screwing up and down to open and close.

WILLIAM KEY.

Ceres, Cupar, N.B., May 20, 1908.

Nuneaton Gas Company's Affairs.

SIR,—I will endeavour to reply to such parts of Mr. George Helps's letter of last week as appear to me to call for reply.

It does not follow that, because the holdings of those shareholders who voted at the Nuneaton gas meeting were comparatively small, the shareholders were wrong. Many timorous shareholders would give their votes to those in power for family and business reasons, and because the Directors practically threatened to resign. Others, while agreeing in the main, would hesitate to take what after all is the only protection a shareholder has against a Board who, the stronger the case, the more united they would be, and bring all kinds of influence to bear.

I am not an advocate of large dividends, unless they are not only earned for the given period, but also justified by the Company's financial position. At the present juncture, I do not agree with the dividend being restored to 10 per cent. and 7 per cent. for the past half year as proposed, but would rather see the dividend down, save the bank interest, and reduce the heavy amounts outstanding.

I do not presume to ask engineers to take sides in this matter, for the publication of which I am not responsible. They know their own results, and are capable of forming a competent and just opinion.

What Mr. Helps calls my "attack" was made on the management—that is, the Board, and of necessity the Manager. It was not a public attack, be it noted, but one within the rights of a shareholder who is convinced that better things can be done. I still hold this opinion; and I further think that the extraordinary meeting will have its good effect on the future of the Company.

I find that my comparison with Hinckley (three miles from Nuneaton, and only slightly smaller in its output) is justified by the report of last year's working—published in your last issue. The gross profit shown is £5888, or £1911 more than that of Nuneaton. This is roughly the difference in 1907. I still say that an amount of nearly £2000 over the Nuneaton balance (50 per cent.) is not easily accounted for, unless the view I took is correct. I note that whereas the Nuneaton Board have put 3d. on the price of gas, Hinckley take 2d. off the top price.

I do not agree that my criticisms were answered at the shareholders' meeting. Mr. Helps may feel assured that all I want is that the Nuneaton Gas Company may be built up into a strong position, able by reserves to deal with adverse times, and to hold its own with its competitor—I won't say, adversary—the electric light.

I will now answer the questions at the end of Mr. Helps's letter: (1) Because it takes time to hand the requisition form from one shareholder to another. Some I believe lived in the country. (2) Because dividends are not always a sign of sound financial condition. (3) This is my business. (4) Because I am an investor—not a speculator; and I hope to sell my shares when it suits me.

FRED. J. NORTH.

Holly Lodge, Stourbridge, May 23, 1908.

South-West of England Gas Association.

SIR,—Referring to your report of the recent meeting of the newly-formed South-West of England Gas Association, I may say that there are (roughly) one hundred gas undertakings in the district of the Association. Of these undertakings, eleven were represented at the meeting and the representatives of six others adhered—seventeen in all. Out of about 6500 million cubic feet of gas made in the district, the undertakings managed by those attending, or adhering, manufacture the odd 500 millions.

It does not appear to me that these figures carry the evidence of any great enthusiasm for the objects of the Association.

A. EDWARDS, Secretary and Manager.

Taunton Gas-Works, May 20, 1908.

Sulphate Saturators.

SIR,—It is evident from Mr. Williams's letter in your issue of the 19th inst. that he has misapplied the remarks in my letter in your issue of the 12th inst. I intended what I said to apply to my patent saturator only—where the perforations through the walls of the saturator to admit the ammonia and other gases are in practice so strengthened that they are not dependent on the thickness of the walls of the saturator,

and, consequently, the orifices do not become materially enlarged. During my 25 years' experience, I have met with many instances where the orifices in the "cracker-pipe" in the ordinary type of saturator have become much enlarged; and I am sure this experience must be common to many of those who have long been manufacturers of sulphate. I agree with what Mr. Young, in his report, and Mr. Williams, in his letters, say on this subject.

It was to provide better means to more equally distribute the ammonia gases throughout the acid liquor, in the working part of the saturator, that I adopted the method of perforating the wall of the saturator at intervals, and thus, by a better distribution of the gases, endeavour to do away with the formation of blue salt, together with the other difficulties met with in the ordinary type of saturator. In my specification I show quite clearly the wall of the saturator perforated as described above; and it is here where Messrs. Williams and Fenner infringe my patent. It is no use Mr. Williams citing other people's inventions. As a matter of fact, he could not carry out what he intended to do without infringing my patent; besides, the same difficulties he claims to have overcome are all overcome by my patent in a similar manner.

Thornaby-on-Tees, May 23, 1908. GEO. PETTIGREW.

PARLIAMENTARY INTELLIGENCE.

DARTFORD GAS BILL.

The Unopposed Committee of the House of Lords had before them on Wednesday the Dartford Gas Bill. Formal evidence in proof of the preamble having been given, the Bill, without amendment, was ordered to be reported for third reading.

LLANELLY GAS BILL.

Unopposed Bills Committee.—Thursday, May 21.

Before Mr. EMMOTT, Chairman, *Lord Robert* CECIL, Mr. CALDWELL, and Mr. PAULTON, with Mr. MOON, K.C., Speaker's Counsel.)

The Llanelly Gas Bill, which has already passed the House of Lords, came before the Committee to-day.

Mr. *Cooper*, the Parliamentary Agent for the Bill, said this was an ordinary case of a statutory Company applying for additional capital taking advantage of the opportunity to alter their basis of charge from the maximum to a standard price, with a sliding-scale of dividends. The Bill was opposed by the Urban District Council of Llanelly in the other House; and all the amendments which had been made, with the exception of clause 8, were inserted to give effect to an agreement arrived at with the Council in order to secure the withdrawal of their opposition.

Lord ROBERT CECIL: I see the Local Government Board have made a report on the Bill. We ought to know something about that.

Mr. *Cooper:* All the suggestions of the Local Government Board were complied with in the other House; but I think there was one point on which they were not satisfied—that was clause 36. They have had the Bill before them since; and they have made no supplementary representation. I do not know whether they will press their objection.

Lord ROBERT CECIL: We have got to be satisfied. It is not a question whether they press it or not.

The CHAIRMAN: What is the objection?

Mr. *Cooper:* They object to the omission of certain words contained in the Model Clause, to the effect that "nothing in this section shall authorize the Company to lay any mains or interfere with any streets beyond their limits of supply." We felt that this was quite an unnecessary restriction. *Primâ facie* it might prevent the Company exercising powers which Parliament intended to give them.

Mr. MOON: What powers have you to go beyond the limits of your area of supply?

Mr. *Cooper:* I do not know that we have any. Therefore I do not see the necessity for this restriction.

Lord ROBERT CECIL: Is that the only difference between this clause and the Model Clause?

Mr. *Cooper:* That is all.

Lord ROBERT CECIL: Why don't you put them in?

Mr. *Cooper:* Because, if we have the power by law to interfere with streets, if we put these words in we should be deprived of that power if it was necessary to use it under exceptional circumstances.

Lord ROBERT CECIL: I am not at all satisfied that the words should not be inserted. You have no power to lay mains beyond your limits, except by agreement.

Mr. *Cooper:* If we have under the common law, why should we be deprived of them?

Lord ROBERT CECIL: Because it is in the Model Clause. Why should you be different to everybody else?

Mr. *Cooper:* I am only surmising that that was the objection of the Local Government Board. It may be they objected to the inclusion of certain words which have since been omitted. The words of the clause omitted were: "The Company may contract with any private company or persons beyond the Company's area of supply, but only with the consent in writing of any local authority or company supplying gas under parliamentary powers." We amended the clause, and the House of Lords accepted the alterations. We have no power to go into other districts of supply.

Lord ROBERT CECIL: I think the words of the Model Clause should be inserted unless there is special reason why they should not be.

Mr. *Cooper:* If you think they should go in, I must insert them.

The words omitted from the Model Clause were inserted.

Mr. *James Williams*, the Chairman of the Llanelly Gas Company, having formally proved the preamble, the Bill was passed through Committee.

DRAYCOTT GAS BILL.

House of Lords Committee.—Friday, May 22.

(*Before Lord* KINTORE, *Chairman, Lord* CLIFTON, *Duke of* WELLINGTON, *Lord* WESTMEATH, *and Lord* ELLENBOROUGH.)

This Bill, which is promoted by the Draycott Gas Company, has for its chief objects to repeal certain powers of the Long Eaton Gas Company, to extend their limits of supply, to provide for the purchase by agreement of the Castle Donington Gas and Coke Company, Limited, and to enable the Draycott Company to manufacture gas on certain scheduled lands, to purchase land by agreement, to convert existing capital, to provide for a renewal fund, and for authority to reduce the illuminating power from 15 to 14 candles and to modernize the testing arrangements.

Mr. HONORATUS LLOYD, K.C., Mr. G. J. TALBOT, K.C., and Mr. R. S. CLEASE appeared for the promoters; while the only petitioners against the Bill—the Long Eaton Gas Company—were represented by Mr. BALFOUR BROWNE, K.C., the Hon. J. D. FITZGERALD, K.C., and Mr. C. C. HUTCHINSON.

Mr. HONORATUS LLOYD, in opening on behalf of the promoters, said the objects of the Bill were really ten in number; but the only two parts opposed were those with reference to the district supplied and a small extension of limits. The Draycott Company was originally formed to take over some private gas-works; and it was made a parliamentary Company by an Act of 1888. The original capital was £10,000, with an additional capital of £10,000, and a loan capital of £5000. The share capital had not all been issued; and there was a temporary loan. The Long Eaton Gas Company was a limited Company, with powers, under an Act of 1864, to supply Long Eaton and several adjoining parishes. In 1880 they obtained an Act of Parliament by which their limits were defined to include Long Eaton, Sawley, and a number of other places. At that time they had a much more lucrative business in one part of their district than they had anticipated. They set to work to supply the most populous portion of it, and spent the greater part of their capital in so doing. The result was that they did nothing whatever in the western portion of the district. In 1887, a demand arose for gas in the western area; and Mr. Hooley, a Nottingham gentleman, was very desirous of having a supply of gas for the works which he was setting up. He applied to the Long Eaton Company, who offered him a supply at the boundary of Long Eaton. Their statutory powers included the whole district; and they could, had they been so minded, have laid the mains and supplied Mr. Hooley. Nothing was done in the end; and Mr. Hooley was obliged to erect gas-works for himself, in order to supply his property. He turned these works into a limited Company in 1888. The Company came to Parliament and obtained the Act which made them a statutory concern—the present Draycott Gas Company. Up to 1896, the Company had not a very remunerative business; but in that year, certain business men became Directors and improved the undertaking so as to be remunerative to themselves. Then the demand for gas increased very largely. In 1901, when the Long Eaton Company were applying to Parliament for further capital powers, the Draycott Company thought it a good opportunity for discussing with Parliament whether or not it was in the interests of the Company that the competitive powers should continue. Negotiations took place between the Companies; and the suggestion was made that they should district the combined area of supply between them. No satisfactory dividing line was devised, however, and the negotiations fell through. The Draycott Company then went to Parliament to oppose the Long Eaton Bill, and fix a dividing line if possible. When the Bill came before the House of Commons, it was stated that it was merely a measure to enable the Long Eaton Company to take fresh capital powers, and on the ground of *locus* the Draycott Company were not entitled to be heard. The Long Eaton Company obtained their Act of 1901; and their standard price was fixed at 5s. 2d. per 1000 cubic feet in Long Eaton and 6s. 2d. beyond. Up to this time, the petitioners had not supplied a single cubic foot of gas in the disputed area, nor did they do so for many years afterwards. But Draycott, having obtained their Act of 1888, had done everything that could be reasonably expected of a gas company; and they had had no complaints (excepting within the last few months with regard to public lighting) during the whole of their career. They had supplied gas at prices which, considering the size of the Company, were almost unique. Their consumption had gone up to 35 millions; and their average price had been reduced from 3s. 4d. per 1000 cubic feet in 1895 to 2s. 4½d. in 1906. Satisfaction had been given to everybody in the district; and although they were now seeking fresh capital powers and asking for an extension of their limits, thereby giving the Local Authorities an opportunity of coming before their Lordships to review their conduct, there was not a voice or a finger raised against the Company, and all the Local Authorities were absolutely content. Quite recently they found that the rival Company were extending their mains towards the Draycott Company's district; and the first intimation they had of the real intention of the Long Eaton Company was when they laid two lines of pipes inside the area. At this particular point some property was being built; but the petitioners, although they laid these pipes, had not got a main anywhere near. It was found in 1906 that the petitioners were laying mains through the Draycott area; and after the promoters had given notice of their Bill, the mains were extended. The Long Eaton Company had adopted some of the most extraordinary methods for pushing competition that had ever been known in gas history. They wrote to the Draycott consumers, who were supplied at 2s. 6d. per 1000 feet, and told them they could have a supply for 2s.; and in some cases the offer had been accepted. To meet this competition, the Draycott Company reduced their price to 2s.; and the result had been an artificial position of competition. As an example of the competitive rates, the petitioners were charging the small consumer 2s. 8½d. in the Long Eaton district; while they were supplying in the Draycott area at 2s. It was impossible for such a state of affairs to continue. The petitioners were undoubtedly trying to turn the Draycott Company out of their own district. Up to the

present, the promoters had not lost many customers; but, nevertheless, the position was quite intolerable. When the Draycott Company had developed a district, the Long Eaton Company had swooped down upon it, and, by unscrupulous methods, had placed them at a disability to supply. At one time, Parliament used to grant competitive powers to gas companies; but he believed for the past 40 years there had been no case in which such powers had been given—on the contrary, the invariable and established practice had been in favour of districting. There was only one other part of the Bill on which opposition arose; and that was with regard to the extended limits.

Mr. BALFOUR BROWNE remarked that that would not be contested by the petitioners.

Mr. HONORATUS LLOYD, continuing, said the petitioners had endeavoured to create prejudice against the Draycott Company with reference to its formation, and that there was something shady in the financial transactions; but he could assure the Committee that there was nothing shady about it. He asked the Committee to confirm the decision of the House of Commons Committee, because if the present competition were allowed to continue, and they were forced to supply gas at 2s. per 1000 cubic feet, it would result in their ruin.

Mr. *J. N. Derbyshire*, the Chairman of the Draycott Company, was the first witness on behalf of the promoters. He said the Long Eaton Company was formed in 1864 as a limited Company, for the purpose of supplying gas in Long Eaton and the adjoining parishes. In 1887, the Draycott Company was formed; and in 1901 a conference took place between them with reference to the area. But the negotiations were broken off, because the Draycott Company refused the offer which was made to them. Since 1901, the district had developed very considerably. In 1906, each Company's mains were within half-a-mile of the boundary; and up to the end of that year the Long Eaton Company had not carried any supply into the Draycott area. So that they had not put into operation till then the powers they obtained in 1880—a period of 26 years. In March, 1907, however, they took their mains over and beyond the boundary. At Breaston, therefore, the Long Eaton Company had offered to supply gas at 2s., to remove the present fittings, and to furnish, entirely free of charge, an incandescent installation—in fact, a modern system of lighting throughout. In Long Eaton, the Company were supplying their prepayment customers with 25 cubic feet of gas for 1d.; while at Breaston the charge was 1d. for 30 feet. Before the invasion of the Long Eaton Company, the Draycott Company were supplying as cheaply as any gas company in Derby. He was convinced that if the present competition was continued it would result in the weaker Company going to the wall.

In cross-examination by Mr. BALFOUR BROWNE, witness admitted that they were charging less in the competitive area. The result of the competition was that the consumers were getting gas cheaper than they would if only one Company were supplying. It was admirable for the consumer so long as it lasted. He did not mind fair competition; but this was unfair. He admitted that the Draycott Company wished to turn their competitors out of the district so as to be able to raise the price of gas. Since the competition began, the Draycott Company had paid their usual dividend of 10 per cent.

The DUKE OF WELLINGTON: Are these competitive prices which are being charged now below the net cost of the gas?

Witness: Not to us.

In re-examination by Mr. HONORATUS LLOYD, witness said they had laid mains and given a supply to everybody who had asked for it; and in some places they had anticipated the demand and laid mains in advance. If the Bill did not pass, he did not think the present prices would continue. They could not go on supplying remuneratively at 2s. The offer the Long Eaton Company made to the Draycott customers was that the charge of 2s. per 1000 cubic feet should continue for two years—reserving themselves the right to raise it at the end of that period. He did not know of a case of a company charging a less price at a distance from their works than close to their works.

Sir *George Livesey*, examined by Mr. TALBOT, said competition simply meant ultimate combination; and if the consumers had to pay interest on two capitals, it was waste of capital. With regard to the question of districting, he said that this was commenced in London in consequence of a new competing company being started. The result was that the companies in South London districted among themselves; and in this, as in other cases, it had been to the advantage of the public. In the present instance, the competition could not be continued. When giving authority to a gas company to supply a certain district, Parliament had placed upon them an obligation, which the Long Eaton Company in this case had failed to discharge.

Mr. *Corbet Woodall* stated that all the money which had been expended and appeared in the accounts as capital expenditure was well and fully represented by works and plant. Having regard to the supply which the Draycott Company gave, the capital, as it stood, was by no means an unreasonable figure. The promoters had supplied gas at a reasonable price; and, as a matter of fact, the price of gas had been consistently reduced. There had been no complaint by the Local Authority as to the way in which the Company had carried on their business. When the Draycott Company obtained their powers, it was over the district where the Long Eaton Company already had power to supply. It was quite clear that, in charging such low rates, the Long Eaton Company's intention was to compete with the smaller Draycott Company; but the present state of affairs could not continue. It was in the interest of the public that districting should take place.

In reply to Mr. HUTCHINSON, witness said competition in gas supply meant extravagance; and therefore he was opposed to it. The methods which had been employed by the Long Eaton Company were scandalous and disgraceful. It was unfair that, after having had their power to supply Breaston for 30 years, and now that the Draycott Company had developed the district, they should swoop down upon it and take their profits away. When competition was dispensed with, the price would go up again; but the consumers would not suffer.

Mr. HUTCHINSON: Supposing we were to agree that we would charge a flat-rate over the whole of our area, and you were to charge a flat-rate, would not that meet it?

Witness: No; certainly not.

In fact, the only thing that will satisfy you will be that you shall kick us out of the area granted to us in 1888?—If you put it so, yes.

Mr. *Charles Hunt* said the works of the Company were in excellent order, and were capable of supplying more gas than was required. The Company had been most active in supplying the public. The prices for gas were very moderate, and compared favourably with those charged in similar districts. There was not the least need for the intervention of the Long Eaton Company. The present competition could not be permanent. With regard to the mains which the Long Eaton Company had in the Draycott Company's area, it was stated that the total cost had been £4200. To take up the mains would not cost more than £700.

Mr. *Harrison*, a civil engineer of Breaston, said that the people in the district felt that the intervention of the Long Eaton Company was uncalled for and unnecessary.

Mr. BALFOUR BROWNE then briefly addressed the Committee on behalf of the petitioners. He said that if Parliament was going to take away the rights which had been given to them, they would never do so without compensation. There was no precedent for such a case. He asked them not to be a party to such a scheme as this, which was to leave the Long Eaton Company, who would have spent their money uselessly under the sanction of Parliament, without any compensation whatever.

Mr. *John Marshall*, the Chairman of the Long Eaton Gas Company, said they had acted within their rights; and if the Bill were to pass, they would be involved in considerable loss. The price of 2s. had been created by competition; but they would not like to go on supplying at this rate. He held that when they went into Breaston and charged 2s. per 1000 cubic feet, it was after the Draycott Company had reduced their price from 2s. 6d. to 2s.

Monday, May 25.

When the Committee met to-day, evidence was given in support of the petition of the Long Eaton Company by Mr. *Thomas Merry*, the Chairman of the Breaston Parish Council, Mr. *Samuel Hind*, a lace maker, of Breaston, Mr. *Bryan*, a coal merchant, of Draycott, and Mr. *E. H. Stevenson*.

The Committee found the preamble of the Bill proved; but failing agreement for the disposal of the Long Eaton Company's mains *in situ* from the point of junction of the Risley main at Breaston to the railway crossing, and in the event of their having to be removed, the Committee allowed compensation to the Long Eaton Company up to the amount of the expense only—the amount in question to be settled by arbitration.

An extended report of the day's proceedings will appear next week.

LEGAL INTELLIGENCE.

BLANDFORD GAS AND COKE COMPANY, LIMITED.

On Tuesday last, Mr. Justice Swinfen Eady heard a petition presented by the Directors of this Company asking that the name of the Company might be restored to the Register of Joint-Stock Companies. Mr. Wright stated that the name had been off the register since the year 1897, though the Company had been carrying on business in the usual way; and it had only recently come to the knowledge of the Directors that the name had been removed.

His Lordship asked whether the Company had failed to make the usual returns; and their Counsel replied in the affirmative. He said it appeared that the Secretary had omitted to make any returns after 1895. In reply to a further question by his Lordship, it was said the Company have meanwhile been making and supplying gas.

The Registrar of Joint Stock Companies, through his Counsel, did not oppose the application, but asked that the petitioners should be ordered to file all the returns that were in arrear.

His Lordship made the order for restoration, and directed that the returns should be filed—the Company to pay the costs of the Registrar.

The Companies Act, 1907.

A circular has just been issued by the Institute of Directors, which points out that among the many important alterations and additions to existing regulations imposed under the Companies Act, 1907 (7 Edw. 7 ch. 50), which come into operation on July 1 next, is the full legal recognition for the first time of a "private company" as distinct from a public company. The principal advantage conferred upon a "private company" by the Act is that it is not required to file annually any statement of its financial position. Section 37 of the Act (which relates to a "private company") is as follows:—

(1) For the purposes of this Act the expression "private company" means a company which by its articles: (*a*) restricts the right to transfer its shares; and (*b*) limits the number of its members—exclusive of persons who are in the employment of the company—to fifty; and (*c*) prohibits any invitation to the public to subscribe for any shares or debentures of the company. (2) A private company may, subject to anything contained in the memorandum or articles of association of the company, by passing a special resolution and by filing with the registrar such a statement in lieu of prospectus as the company, if a public company, would under the provisions of this Act have had to file before allotting any of its shares or debentures, together with such a statutory declaration as the company, if a public company, would under the provisions of section 6 of the Companies Act, 1900, have had to file before commencing business, turn itself into a public company. (3) Where two or more persons hold one or more shares in a company jointly, they shall, for the purposes of this section, be treated as a single member. (4) Wherever in the Companies Acts a minimum of seven members is required only two members shall be required in the case of a private company.

From this it will be seen that all limited companies desiring to come within the definition of a "private company" must alter their articles of association, in so far as may be necessary, to include the statutory requirements as set out above before July 1 next; otherwise they will not be "private companies" within the meaning of the Act. No provision is made whereby a public company can turn into a private one.

MISCELLANEOUS NEWS.

SULPHUR IN LONDON GAS.

The Public Control Committee of the London County Council will, at the meeting to-day, present the following report.

Gas Testing—Sulphur in Gas.

We reported on Dec. 12, 1905, with reference to the terms of the London Gas Act, 1905, which came into operation on the 1st of January, 1906, relating to the gas supplied in London by the Gaslight and Coke Company, the South Metropolitan Gas Company, and the Commercial Gas Company. In our report we pointed out, among other things, that the Act abolished forfeitures for excess of sulphur impurities (other than sulphuretted hydrogen) in gas. The Council will probably remember that we were not in favour of legislation for removing the restrictions with regard to the presence of sulphur compounds in gas; but the Companies maintained that there was no method by which these compounds could be removed without creating a nuisance in the process of purification.

It was the custom of the Metropolitan Gas Referees, before the passing of the Act of 1905, to prescribe maximum amounts of 17 and 22 grains of sulphur for each 100 cubic feet of gas for summer and winter respectively. The Gas Companies complied with these requirements, but protested to the Departmental Committee on Gas Testing in the Metropolis that the restrictions were unreasonable, and involved considerable hardship on them; and it was stated by the Chairman of the South Metropolitan Gas Company that 35 grains per 100 cubic feet would be a probable average amount of sulphur in the gas if the restrictions requiring purification by means of lime were removed, as was done by the Act of 1905.

In our previous report we pointed out that, very soon after the passing of the Act, the gas supplied by certain Companies has been charged with a greater amount of sulphur compounds than was stated by the Companies' witnesses would be present in the gas if the purification by lime should cease. We expressed the hope, however, that the proportion of sulphur impurities would diminish when the Companies should have had more experience of the new method of working.

We have now had before us particulars of the quality of gas supplied during the year 1907; and the increase in the amount of sulphur present in the gas is very noticeable. The first year's working under the new conditions may, we think, be regarded as experimental; but it is only reasonable to assume that in the year 1907 the Companies should have been supplying gas of the best quality obtainable without the use of lime. The average amount of sulphur in the gas supplied by each of the three Companies is above the limit of 35 grains per 100 cubic feet, referred to above; and in the case of one Company is very considerably above that limit, which, it should be remembered, is much higher than the original limit laid down by the Gas Referees.

We regard this question as one which very seriously affects the interests of gas consumers generally; and we therefore propose to ask the Gas Companies for an explanation of the large proportion of sulphur compounds present in the gas supplied by them, and for an assurance that the proportion shall be reduced in the near future.

HEYWOOD CORPORATION GAS SUPPLY.

The report of Mr. W. Whatmough, the Gas Engineer and Manager to the Heywood Corporation, for the twelve months to March shows that the higher price of coal has somewhat affected the profits.

The outlay on capital account amounted to £272; and it was for prepayment meters and new mains and services. The gross revenue was £22,877, and the gross expenditure (less interest and sinking fund), £16,157; leaving a gross profit of £6720, or a decrease of £616. The net profit amounted to £1358, or a decrease of £589, due entirely to the increased cost of coal. The additional cost per ton of coal for the year was 1s. 7·86d., which represents an increased charge to revenue of £1082. The receipts from gas sold for all purposes were £18,000, compared with £17,588 in the year 1906-7—an increase of £412. The increased amount received from ordinary private consumption was £120, from public lighting £127, and from prepayment meters £271; but stoves and motive power show a decrease of £7. The revenue from residuals was £4504, against £4015 before; being an increase of £489. Coke and sulphate of ammonia exhibit an increase of £469 and £109 respectively; and tar a decrease of £89. Manufacture shows an increased expenditure of £1439, principally due to the increased cost of coal; this account being £1256 more than in the previous year. During the year, 12,740 tons of coal and 345 tons of cannel were carbonized—a total of 13,085 tons of raw material, against 12,771 tons before; being an increase of 314 tons. The gas made per ton was 10,770 cubic feet, or 21 cubic feet more than in the year 1906-7. The quantity of benzol used was 7620 gallons. The total quantity of gas manufactured amounted to 140,933,000 cubic feet, being an increase of 3,647,000 cubic feet; and the total quantity sold was 128,575,548 cubic feet, or an increase of 2,287,680 cubic feet. The gas not accounted for was 11,102,102 cubic feet, which is equal to 7·88 per cent. The following table shows the various purposes for which gas was used:—

	Cubic Feet.	Per Cent.
Shops and dwellings—		
Ordinary meters	59,556,300	45·88
Prepayment meters	12,812,500	9·87
Mills and workshops	24,303,150	18·73
Public lamps	6,607,348	5·09
Stoves	17,390,650	13·40
Motive power	7,905,600	6·09
Office, works, show-room, and public clocks	1,225,350	0·94
Total consumption	129,800,898	100·00

The gas consumed in dwellings and shops through ordinary meters shows an increase of 429,547 cubic feet, and through prepayment meters one of 1,606,250 feet. For public lighting there was an increase of 900,783 feet. For mills and workshops there was an increase of 164,050 feet; but for stoves and motive power there was a decrease of 812,950 feet. The quantity of gas delivered between 6 a.m. and 6 p.m. was 59,871,000 cubic feet, or 42·49 per cent. of the total; and between 6 p.m. and 6 a.m. 81,032,000 feet, or 57·51 per cent.

Mr. Whatmough concludes his report in the following terms: "During the past year the Committee have had under consideration improved methods of carbonization; but as the question is in a state of transition, the matter has been deferred. There is, however, every probability that at no distant date sufficient experience will have been gained to enable the Committee to arrive at a satisfactory conclusion."

ECHO OF THE SOUTHPORT-BIRKDALE GAS QUESTION.

Several columns of the "Southport Visiter" have recently been taken up with correspondence and editorial notes reviving the question between the Southport Corporation and the Birkdale District Council concerning the adoption of the "Metropolitan" No. 2 burner for testing purposes, in place of the No. 1 "London" argand. It will be remembered that some time since the Southport Corporation decided to apply to the Board of Trade for permission to use this burner. The Birkdale Council opposed, on the ground that the testing of the gas in this manner would, in view of the higher illuminating efficiency obtained, be a violation of the agreement that existed with Southport for the supply of gas in the Birkdale district; and they claimed that a reduction in price should be granted to the consumers. However, after a hearing of the parties at the Board of Trade offices, the Board decided entirely in favour of Southport; and the new burner is now in use.

In an issue of the "Southport Visiter" quite recently, Mr. Samuel Hardman, the Elective Auditor, in a column-length letter, re-opened the question. In his letter, he stated that the Southport Corporation were now giving less than 14-candle power gas by the No. 1 burner, which was a clear violation of good faith. One does not expect an Elective Auditor to be a photometrist; but Mr. Hardman's letter very clearly indicated either that he was an efficient photometrist or that he had copiously supplied himself with information from some other source than his own head and work. It now appears that Mr. Hardman has been guilty of plagiarism, and that the letter was composed almost entirely of a report that Mr. Isaac Carr made to the Birkdale Authority when the question was originally under consideration. This report has not hitherto been published in our columns; and therefore from the publication by Mr. Hardman we may take the following—it being, of course, understood that the tests are Mr. Carr's.

Recent research work shows that the fall in calorific value for each candle power of reduction is about 3½ to 4 per cent. The effect of the proposed change from one method of testing to another is clearly definable, and its value can be calculated, as shown in the following tests.

Comparative efficiency tests with 16-candle coal gas—*i.e.*, tested in the No. 1 "London" argand at the 5 feet rate and 16-candle gas, as ascertained by the No. 2 "Metropolitan" argand.

	16-Candle Gas No. 1 "London" Argand.	16-Candle Gas No. 2 "Metropolitan" Argand.
Tested in No. 1 "London" argand	16·0	13·6
Tested in No. 2 "Metropolitan" argand	18·2	16·0
Tested in No. 4 Bray with No. 7 economizer flat flame (candles per cubic foot)	2·8	2·0
Tested in Welsbach "C" burner (do.)	21·1	18·05
Calorific value B.Th.U. gross	635	575

Statement of difference in values between 16-candle gas in the No. 1 "London" argand and the No. 2 "Metropolitan" argand at the Birkdale price of 3s. 2d. per 1000 cubic feet.

The illuminating power of the proposed new 16-candle gas when tested according to the existing statutory method—*i.e.*, when burning at the rate of 5 feet in the No. 1 "London" argand	13·6 candles.
The increased quantity of gas the consumer with the flat-flame burner will have to use with the new 16-candle gas to get the same amount of light he now gets	28·6 per cent., or 1286 cubic feet in place of 1000 feet.
The value of this depreciation in money at the current price of 3s. 2d. per 1000 cubic feet the Birkdale consumer pays is	10·26d. per 1000 cubic feet.
The net increase to consumer to obtain the same amount of light which he is now entitled (per 1000 cubic feet)	10·86d.
The difference in calorific value between the two gases was found to be	635 and 573 B.Th.U., or 9·7 per cent.
The value of this 9·7 per cent. loss in calorific value to the consumers for cooking, heating, and motive power, dividing the price by the heat units, equals	3·68d. per 1000 cubic feet.
The falling off in duty in the two gases when used on the incandescent burner was found to be	Efficiency per cubic foot falls from 21·1 to 18·05, or 14·4 per cent. — 5·47d. per 1000 cubic feet.

Alderman Travis, in an interview regarding this communication of Mr. Hardman's, pointed out the piracy in which the author had indulged; and he said that the report of Mr. Carr was submitted by the Southport Corporation to their expert. On the Board of Trade asking if Southport had any observations to make thereon, Sir George Livesey

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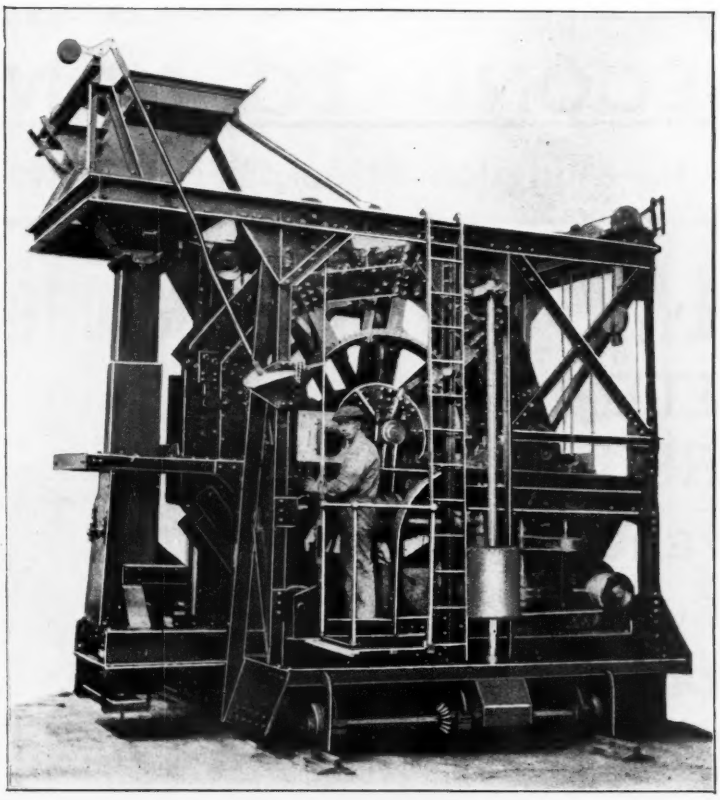

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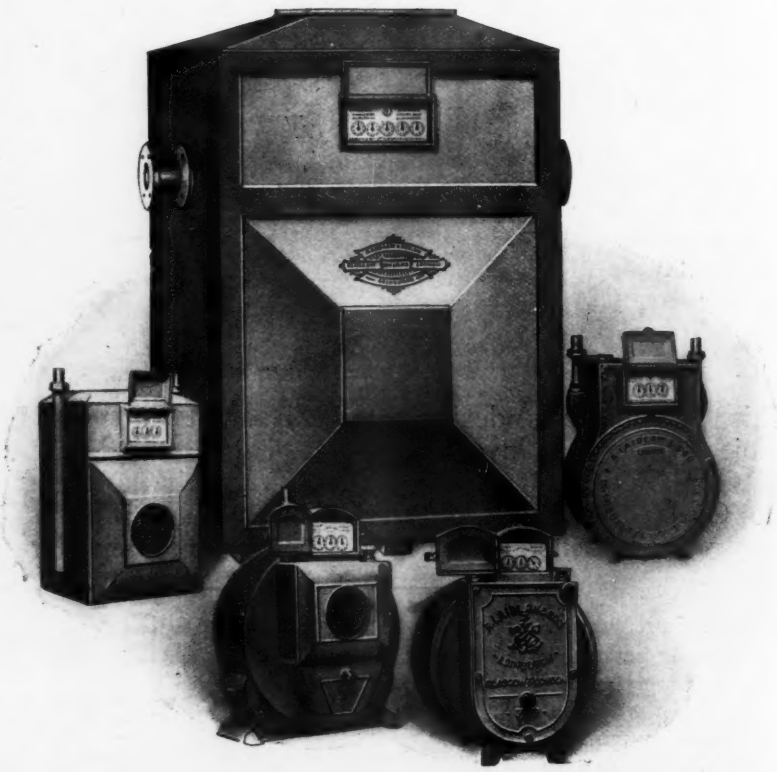

(who was advising the Southport Corporation) advised Southport to make no observations upon it, as it would be giving the report a dignity which it did not possess. "That was the treatment meted out to this report," the Alderman added, "and I think it went into the waste-paper basket of the Board of Trade offices." Moreover, he said, Mr. Carr himself sought at the eleventh hour to put in an amended statement as to his efficiency tests; but the Board of Trade would have none of this, and they practically declined to take any notice of the amended figures.

Later there was published an interesting letter from Mr. Isaac Carr, in which he commented on the statements of Alderman Travis, and on other matters, as to the inquiry at the Board of Trade offices, before the Hon. T. H. W. Pelham. In this connection he says:

> As a sidelight on the searching nature of this particular Board of Trade inquiry, I may mention that during the course of my evidence I attempted to explain the relative efficiency and values of one kind of test burner with another, when Mr. Pelham interposed, to the consternation of the Birkdale representatives and the apparent joy of those from Southport, that relative burner efficiency was a matter he did not understand, and therefore declined to listen to what I had to say. But mark the difference when Sir George Livesey gave his evidence. Sir George did not attempt to tax Mr. Pelham with any troublesome technicalities as to the relative efficiency of standard test burners, but contented himself with general statements to the effect that low-grade gas was better for the consumers than high-grade gas. As a matter of fact, so favourable was the impression made by Sir George that, after the room had been cleared, Sir George was invited to return to confer privately with Mr. Pelham. What transpired at this conference I have no idea; but I do know that the same privilege was not extended to either of the experts on the Birkdale side.
>
> The figures of comparative efficiency and values of the two qualities of gas have not been disproved. There was, however, one inaccuracy in one of my tests, which inaccuracy I find was not corrected in the report now published. [This is the "eleventh hour amendment" Alderman Travis talks about.] I discovered the mistake after sending in my first report, during the process of a series of check testings, and corrected it before the evidence at the inquiry was taken. The Town Clerk of Southport was furnished at the commencement of the inquiry with a copy of my corrected figure on this particular test, which was that relating to "Incandescent Burner Efficiency."
>
> Sir George Livesey (the Southport expert, and, by the way, the father of the No. 2 "Metropolitan" argand burner), according to Alderman Travis, advised Southport to make no observations on my report, as it would be giving the report a dignity it did not possess. This method of disposing of my statements, tests, and figures was not only easy but convenient, from Sir George's point of view, as I hold the opinion that relative efficiency and values of standard burners is a matter upon which Sir George is not any too anxious to push for an investigation. Alderman Travis thinks my report went into the waste-paper basket of the Board of Trade offices. This may be quite true. But I would say here that it is particularly unfortunate for the gas consumers of Birkdale and Southport that the losses they are suffering through the introduction of low-grade gas cannot be disposed of in like manner. Neither Mr. Newbigging's figures [Mr. J. G. Newbigging checked at Manchester Mr. Carr's tests] nor my own have been disproved. Moreover, they are capable of easy verification; and I am at the call of anyone, including Sir George Livesey and Alderman Travis, at any time, for this purpose. On this subject of test burners I would like to add that it almost appears as though even Southport had "missed a chance" of still further squeezing the consumers by precipitating matters too eagerly, for the following reason: Since the introduction of the No. 2 "Metropolitan" standard argand, which was the best-known burner at the time of the Board of Trade application, a further development has taken place; and there is now still another test burner, known as the "Parliamentary" standard argand, which actually gives a photometrical value to the gas 2 candles higher than that of the No. 2 "Metropolitan" burner. By the adoption of this burner, Southport could drop its illuminating power another 2 candles, and the Alderman could acclaim (doubtless with the concurrence of Sir George Livesey) that he was still supplying 16-candle gas.
>
> Strangely enough, this latest test burner conforms in description to the original standard burners prescribed by the 35th section of the Southport Improvement Act, 1871—viz., a fifteen-hole argand burner, with a 7-inch chimney. What a pity (for the Alderman, yet a fortunate circumstance for the consumers) that this further development did not appear two years ago. However, the opportunity may arise at no distant date for the Alderman to throw over the No. 2 "Metropolitan" burner, as he has already done the original prescribed burner, the "Silber" argand, and the No. 1 "London" argand, and take on with the new love. From a utilitarian point of view, 16-candle gas in the "Parliamentary" test burners would be of little service to the consumers; but this the Alderman probably would not mind, so long as the test in the photometer-room came forth 16 candles, and especially so if the burner should happen to be "hall-marked" with the approval of the Board of Trade.

Large Reservoir Contract at Leeds.—The Leeds Water Committee have decided to recommend the Council to give the contract for the Leighton reservoir to Messrs. Arnold and Sons, of Doncaster, for £437,000. The Leighton reservoir is part of the Ure Valley scheme, and will contain 1136 million gallons of water.

Water Supply of the City.—At last Thursday's meeting of the Court of Common Council, notice of motion was given to refer to a Committee an inquiry into the position existing with reference to the water supply, with a view to the City, if possible, undertaking its own supply. The question arose out of an application (which was granted) by a firm for permission to lay a pipe for supplying one building in Fenchurch Avenue from a well on other premises.

BIRMINGHAM CORPORATION GAS DEPARTMENT.

What the Figures Mean.

The accounts of the Birmingham Gas Department for the year to March 31 show that the receipts from the sale of gas amounted to £720,323, as compared with £687,230 in the preceding year; while residual products realized £250,656, against £206,545. The total receipts were £980,089, as compared with £902,850. On the other side of the revenue account, under manufacture, coal (including oil, carriage, unloading, and all other expenses of depositing same on the works) cost £398,332, against £324,102 in the preceding year; purifying materials and wages, £16,238, against £15,768; wages at works, £80,385, against £78,104; and repairs, maintenance, and renewal of works, plant, retorts, machines, apparatus, and tools (less old materials sold), £168,654, against £172,020. The total cost of distribution was £62,020, as compared with £61,968; and the remaining items brought the expenditure up to £800,126, against £724,252 in 1907. There was thus on the present occasion a balance of £179,963 to be carried to the profit and loss account, compared with £178,598 in the previous year. After meeting interest and other charges, there is a net balance of £61,313, which compares with £57,563 last year.

The quantity of coal carbonized in the past twelve months was 587,490 tons, and of gas oil used 2,563,361 gallons. Of gas sold and used on works, the amount was 7,042,025,400 cubic feet. The price of gas, less 5 per cent. discount for prompt payment, was 1s. 7d. to 2s. 6d. per 1000 cubic feet; the average net price having been 2s. 0·55d. Coke and breeze realized £149,927; tar, £43,969; and ammoniacal liquor, £56,620. The estimated quantities made were: Coke, 314,037 tons; breeze, 56,323 tons; tar, 7,065,186 gallons; and ammoniacal liquor, 21,898,823 gallons. Of coke, 234,304 tons were sold, and 80,439 tons used.

A representative of the "Birmingham Daily Mail," having, on perusing the report of the Gas Committee, which was noticed in last week's "JOURNAL," come to the conclusion that such a prosaic presentation of columns of figures does not attract the special attention of ratepayers or excite their imagination, sought Mr. G. Hampton Barber (the Secretary of the Gas Department), with a view to putting the facts forward in a manner more likely to appeal to the lay mind. The result may be told in the interviewer's own words.

When a "Mail" representative called upon Mr. Hampton Barber, the Secretary of the City Gas Department, and suggested a more picturesque, if less sedate and orthodox, way of conveying to the local public a sense of the magnitude of the city's gas undertaking, this gentleman said that, singularly enough, he had already had the matter in mind. For instance, he said, our largest gasholder has a capacity of 8,343,000 cubic feet; but perhaps a better idea of its size will be afforded by saying that if it were divided into fifteen storeys, each 6 feet high, it would hold in a standing position all the population of Birmingham, and still have plenty of room for the total population of Aston Manor and Handsworth. On the ground floor no fewer than 4000 guests could be seated. But there is no reason to believe that the Gas Committee have as yet contemplated converting the place into a banqueting hall or letting it for political mass meetings, though the cynic may observe that it would not be an altogether inappropriate place for such gatherings. If one can imagine a balloon of the ordinary shape with a circumference at its widest part of 3100 feet, five times as tall as the highest point of the Malvern Hills, which is the Worcestershire Beacon, it would just hold the total quantity of gas made in Birmingham last year, and still leave a day or two's supply in hand. If this fails to suggest a mental picture conveying an idea of the immense quantity of gas made in a year, one can look at it in this way—that an ordinary street-lamp would have to burn continuously for 750 years to consume an average day's output of Birmingham gas. Again, the consumer who has a penny-in-the-slot meter consumes on the average 15,000 cubic feet a year; and it would have been necessary for eighty of such consumers to have started burning gas at this rate as far back as 4004 B.C. to be just now exhausting the amount of gas made in a year under the management of the Gas Committee. Last year, speaking in round figures, £120,000 was collected from the slot gas-meters; the total weight of the pennies being about 275 tons, or not far short of a ton of pennies each working day.

Now with regard to the amount of coal carbonized in a year, one can gather some notion of the vast quantity used when it is stated that it would require a train 300 miles long to convey the whole of the year's supply from the coalfields to the local gas-works. It is needless to say the department does not arrange for all the coal to be sent in one train or to arrive the same day. Coke being lighter in weight than coal, according to bulk, an ordinary railway truck will hold only 4 tons, as compared with 8 tons of coal. Consequently, a train of nearly 140,000 trucks would be required to convey all the coke made in a year at the Birmingham Gas-Works. One can look at the year's output of coke in another way. It would take 20,000 years to burn it in an ordinary house-grate; or, if the whole of last year's coke was built into a tower of the same square size as the Art Gallery tower, it would be 10 miles high. Gas is now so generally used for cooking purposes that one may well try and convey some idea of the aggregate calorific quality of a year's gas. If one can imagine a huge gas-stove filled with 168,000,000 joints of beef, each of 10 lbs. weight, last year's output of gas in the city would cook them to a turn in three or four hours. To furnish all this meat, a million cattle, weighing on the average 15 cwt., would be needed. It is somewhat difficult to convey any adequate notion of the vast heat which is generated in the retort-houses in the manufacture of the gas; but some idea may be gathered from the fact that the heat thus generated in the year would be sufficient to evaporate 134,400,000,000 gallons of water. One of the chief residuals of gas-making is tar; and of this product sufficient is made at the Birmingham Gas-Works to paint on one side a 6-foot wall of the length of 12,000 miles.

PROFITS IN AID OF RATES.

Increased Grants Asked For.

When the Manchester City Council met last Tuesday, to consider the estimates for the year—these showing an increase in the rates—Alderman Copeland, the Chairman of the Finance Committee, made an appeal to the trading Committees to come forward with larger contributions than had been announced. They wanted, he said, £23,000 to wipe out the prospective increase in the city rates. By a large majority, the Council referred the estimates back; the Finance Committee being instructed to revise them so as to avoid any increase on last year's rate. The Finance Committee met on the Thursday; and afterwards Alderman Copeland stated that they had carried out the wish of the Council. There would, he said, be no increase in the rates; but how this had been accomplished he was not then prepared to say. It had been suggested that the Gas Committee should increase their contribution of £50,000 by another £10,000—a lesser sum to be asked for from other profit-earning departments. The Gas Committee met on Friday, but did not discuss the question of an increased contribution. It is understood, however, that, should the Council insist upon it, they will vote a further sum out of the profits. The matter will be settled at the adjourned meeting of the City Council to-morrow.

The Finance Committee's report was issued to members of the City Council on Saturday. This gives details of how the revision has been carried out, and recommends that the tramways, gas, and electricity departments be requested to increase their contributions in relief of rates in the respective amounts of £5000, £10,000, and £2000. The report adds that, with such increased grants, and a revision of the estimates, the city rate for the current year will be 6s. 6·4d. in the pound, as compared with 6s. 6½d. in the pound for the past year—a decrease of 0·1d. in the pound, as against a contemplated increase of 1·4d.

In the neighbouring borough of Salford, where the Gas Committee are able to allocate out of profits £25,260, in place of the estimated £20,000, rates are advanced by 1d. in the pound. At a meeting of the Council last Tuesday, Alderman Jenkins, the Chairman of the Finance Committee, in presenting the estimates for the year, said that for some time past there had been a tendency, in a certain section of the Daily Press, to criticize the carrying on by municipalities of trading undertakings, such as those for the supply of gas, water, and electricity, &c. He was convinced that, but for the Corporation having become possessed of such excellently managed undertakings as those named, the burden of the rates in the borough would have been much heavier, or they would have had to deny the ratepayers many things which they valued highly, and which were, indeed, a necessity for the densely populated and congested areas which abounded in Salford. The estimates for the current year, Alderman Jenkins explained, showed an increase of £11,465 on last year. The net amount to be rated for was £291,862. The Gas Committee's estimated surplus had increased by £2500; but the Electric Department contribution would be £1500 less.

Alleged "Bleeding" of Profit-Making Departments.

The Bolton Town Council, on Wednesday last, approved of the Finance Committee's estimates, which show an increase in the borough rate of 2d. in the pound, and a similar amount on the central district rate, which, with a 1s. poor rate, makes a total of 6s. 10d. in the pound. Of the trading departments, the Gas Committee contribute £20,000 out of profits, and the Electricity Committee £7500.

The allocation of these amounts gave rise to considerable discussion at the Council meeting. Mr. Harwood, in the first place, moved an amendment that the sum to be voted from the Electricity Department be £6000, the same as last year. He pointed out that the net profit this year was £3000 less, and it seemed curious, in face of this fact, that they should be called upon for a larger grant in aid of the rates. He asked what this meant to the consumer. Why should the electricity consumer pay his enormous share towards the increased expenditure? Did he gain more than the ordinary ratepayer who did not use electricity? He called it an iniquitous method of raising money; and he put it to the Council in this way: "Are you going to vote for cheaper light or higher rates; are you going to vote for the consumers or the landlords?" Mr. Waddington also condemned the system as a bad one, and said no one knew it better than the Chairmen of the different Committees. Alderman Miles had himself protested against the "bleeding" of these profit-earning departments in aid of the rates. It was time the Council faced the situation, and let the ratepayers know what it was costing to govern the town, and the amount that was being squeezed out of the various concerns. He was in favour of gas being supplied at a cheaper rate.

Alderman Miles said a wrong interpretation had been put upon his words about "bleeding departments unduly." He was sure no one in the Council would like to "bleed" any department, and he reminded Mr. Waddington that the Act of Parliament stipulated what should be done with the profits—they were to be devoted to the relief of the rates. They were not victimizing the consumers of gas and electricity, as suggested. Both departments were in a sound financial position; and he was strongly of opinion the consumers had nothing to complain about.

The amendment put forward by Mr. Harwood was lost by a large majority.

When the balance-sheet of the Gas Committee (who had voted £20,000 out of profits in aid of rates) was presented for approval, Mr. Steele made an appeal, on behalf of the shopkeepers, for reduced charges for gas and electricity, as it would be a much needed relief to a very hard working body of people, who already found the burden of rates very heavy upon them. The balance-sheet was adopted without a division.

Suicide by Gas at Bradford.—William Dewhirst, a draper, sixty years of age, was found dead in bed at Bradford, with a piece of india-rubber tubing in his mouth. The other end of the tube was attached to a gas-bracket, the tap of which was turned full on.

REDUCTION IN PRICE AT HUDDERSFIELD.

The Huddersfield Town Council have decided, though not without some discussion, to reduce the price of gas used for illuminating purposes 3d. per 1000 cubic feet—from 2s. 3d. to 2s. For motive power, cooking, and heating, the charge will be 1s. 6d. per 1000 feet; and prepayment meter consumers will be allowed a further rebate of 1d. in the shilling—3d. instead of 2d. as heretofore.

In moving the adoption of the recommendation, Alderman Jessop, the Chairman of the Gas Committee, said the charges would reduce the income slightly; but from their experience of previous reductions, it was not likely that the falling off would reach £5000 in the total. Alderman Woodhead remarked that had the Chairman of the Finance Committee been present he would have requested the reconsideration of the recommendation. In view of the rate-in-aid of the water-works, the time was not opportune to make the change suggested. If there was any opportunity to relieve the consumer, the meter-rents might be abolished. Mr. Walker supported this view; urging that the revenue-producing undertakings of the Council should be co-ordinated, so that in the event of loss by one or more departments the profits from the others might go towards making up the deficiency. Alderman Jessop replied that he could not take the proposal back. The Committee had been driven to adopt the resolution largely by circumstances which occurred two or three years ago. They had been compelled to reduce the price of gas for engines because of the competition from makers of suction gas plant and other forms of motive power. The Committee wanted to use their plant to the full extent; and he felt it rather discouraging to be asked to reconsider their action, when they had handed over handsome balances to the ratepayers. The question of meter-rents would be considered in due course.

GAS-WORKS RESULTS AT RIPON.

In his report on the past year's working of the Ripon gas undertaking, the Manager, Mr. W. T. Lancaster, says the amount of gas made during the year was 41,115,500 cubic feet, as compared with 39,982,300 feet in the preceding twelve months, or an increase of 2·83 per cent. The unaccounted-for gas was 8·14 per cent. The total quantity sold or accounted for was 37,771,020 cubic feet, or 9763 feet per ton of coal carbonized; the total yield having been 10,655 feet per ton. The total amount of coal carbonized was 3868 tons; and the average illuminating power of the gas was 15·9 candles. The quantity of coke and breeze sold was 1625 tons, or 8·4 cwt. per ton of coal carbonized. The amount of sulphate made and sold was 38 tons 7½ cwt., or equal to 22·21 lbs. per ton of coal carbonized. "This," says Mr. Lancaster (comparing the yield with the previous year), "is an increase of 2·45 lbs. per ton of coal carbonized; and every pound increase on 3868 tons means 1 ton 14½ cwt. more sulphate, or £19 10s. worth." The total wages for the past year were £1331, or 7·77d. per 1000 cubic feet of gas made, which was a decrease of 1·2d. when compared with the preceding twelve months. The number of public lamps in use at the present time is 327; and the number of mantles used for same last year was 4151, or 12 69 per lamp. There were 828 slot meters in use, the amount of cash taken for which was £1100, or an average of £1 6s. 7d. per meter. Of ordinary meters there were 1004 in use; and the number of cooking-stoves hired out by the Corporation was 176. The balance owing to the bank at March 31 was £2853, as compared with £3699 at the end of the previous financial year—or a decrease of £846.

In concluding his report, Mr. Lancaster says he considers the results satisfactory, when it is remembered that, while 2s. 6d. per ton more was being paid for coal, the price of gas remained as before (3s. 4d. per 1000 cubic feet, and 4s. 2d. to prepayment consumers), while many gas authorities had been compelled to increase their charges.

ELECTRIC TRACTION AND GAS ESCAPES.

Mr. Whitaker Thompson, the Vice-Chairman of the Council and the Chairman of the Highways Committee, replying to a question by Mr. Gordon at the meeting of the London County Council last Tuesday, with reference to the experiments being made with the "G.B." surface-contact system of electric traction for the tramway service, said he was sorry that during the work in Mile End Road they had found that there had been a most extraordinary escape of gas from the pipes laid there, with a result unfortunate to their system of traction. Until they could get over this escape of gas, it would not be possible for them to run a complete service of cars. There was a portion of the road now where it would be absolutely dangerous for them to run a system of cars. It was not their fault; it was the fault of the Gas Company. In some places, the under-surface and the surface of the road were so impregnated with gas that if one applied a lucifer match it would be interesting, but at the same time unfortunate. They would have to arrange with the Gas Company to put their pipes in the condition that they ought to be in. Mr. Henry Ward asked whether the whole of the roads in the North of London which were waiting for tramways until they knew the result of the experiments with the "G.B." system, must go on waiting until the Gas Company had put their mains right, so as to enable the Council to make the necessary experiments in the Whitechapel Road. Mr. Whitaker Thompson, however, replied that Mr. Ward would hardly expect him to anticipate the report of the Highways Committee.

On Monday last week a meeting of the shareholders in Meldrum Bros., Limited, was held at Timperley, when a resolution to wind-up the Company voluntarily was duly passed, and Mr. Theodore Gregory, C.A., was appointed Liquidator, with a Committee of Inspection consisting of four of the shareholders.

MONTE VIDEO GAS COMPANY, LIMITED.

The Price of Gas.

The Ordinary General Meeting of this Company was held last Thursday, at Winchester House, Old Broad Street, E.C.—Mr. T. C. TATHAM in the chair.

The SECRETARY (Mr. Henry Kearns) read the notice calling the meeting and the report of the Auditors, and the Directors' report (which was noticed in the "JOURNAL" last week, p. 457) and the accounts were taken as read.

The CHAIRMAN said that before he proceeded further with the business of the meeting, he desired to express the regret the Directors felt at the decease of their friend and colleague, Mr. Simpson Rostron. He had been a Director of the Company for many years; and he (the Chairman) felt sure it would be the wish of the shareholders to also place on record their appreciation of his long services. In his place, they had been fortunate in securing the services of Mr. John Mews, a Director of the South Metropolitan Gas Company. Coming to the accounts, if they turned to the debit side they would see that the share and debenture capital remained unaltered, and formed a total of £570,600. To the reserve account they had added this year £4240, thereby increasing it to a total of £28,000. The proprietors would remember that it originally stood at £74,000, but that it was reduced by the sum of £50,240, which was used to redeem the 5 per cent. terminable debentures—always a matter of anxiety. As the Company had had a good year, the Directors had taken the opportunity again to strengthen this fund. The contingency fund at £13,763 showed a reduction on the previous year of £1830. This was entirely due to the depreciation of the securities in which part of the reserves were invested. It would be remembered that during the past two or three years investments of almost every class had seriously depreciated; and as it was the practice of the Company to value their securities every year in the balance-sheet at their market and not at cost prices, they had considered it advisable to replace to the contingency account the amount by which it had been reduced during these years. As it had not been necessary to realize any of their securities, of course, if the prices went up it would be so much the better for the Company. To the reserve account for renewals they had also added £1000 from the profits of the year. This fund, as he mentioned to the shareholders a year ago, was to provide for the reconstruction of one of the old retort-houses, which would soon become necessary; and this work, when they did it, would be carried out on the most modern lines. The sundry creditors were rather more than on the previous occasion, and represented the wages due at the end of December, and some accounts which were not settled until after that date. If the proprietors would now refer to the credit side of the balance-sheet, they would see that there had been written off for depreciation £4905—an increase of £184—and that some old plant had been sold which realized £76. The Board had added the cost of new mains and meters and another lighter, which, though not a new one, had been altered to suit the requirements of the Company. The total capital expenditure, as they would see, had been reduced to £541,174. The stock of coal was valued at £3337 more than in the previous year; but there was an increase in the stock of about 1500 tons. The other items of stocks of gas-fittings and materials showed little variation; and they comprised everything necessary for the maintenance of the gas-works and the materials required in the dock. The stocks of residual products had been reduced to the very low figure of £227, as the sales for the year of coke, breeze, tar, tar oil, and pitch had been large, and had realized good prices. Thus the stocks on hand at Dec. 31 were reduced to exceedingly small quantities. The item of sundry debtors, which amounted to £15,627, was £2939 more; but it did not call for any special comment, because the increase in the gas sales and the large amount of work in hand at the dock at the close of the year would account for it. The investments, which was the next item, showed a decrease, as he had mentioned, of £1830; and this difference had been provided from the contingency account. The yield of interest from these investments was not less than at the time when they were purchased; but the capital value of nearly all securities had been on the down-grade. The remaining item of "Other property" had been reduced by £1175. This was property in Monte Video upon which the Company received rents; and it also included the purchase price of the corner piece of land which had been bought for the erection of offices and show-rooms, for the Company's own use and for letting, as he had explained at the last meeting. They had sold the materials comprising the old building, which had now been pulled down, and had credited the amount received in reduction of the purchase price. The foundations of the new building were being pushed on; and it was hoped that next year they would be able to take possession, and so save the heavy amount now paid for rent of the present offices and show-rooms. Shipments afloat amounted to £6038, which was double what they were in the previous year; but included in this sum were retorts, gas-engines, tubes and fittings, compo. and lead pipe, tools, and a marine boiler which they had sold, as well as other goods for use on the works. It also included a cargo of coal and the freight advanced on this side. The Directors were fortunate in making a coal contract on very favourable terms, which expired on Dec. 31; and they therefore chartered a steamer to take the balance to which they were entitled. Freights, however, during the year had ruled rather high, so that the Company had not derived so much benefit from the cheap coal contract as they at one time expected. Bills receivable on hand and in transit, at £17,000, were £7000 more, and cash in hand at Monte Video and London was £1319 more; so that the financial position of the Company was now gradually improving. Turning to the revenue account, the receipts from gas and residuals, and profits on gas-fittings and materials sold, were £11,565 more than in the previous year; and the receipts from the dock department were £5302 more—making a total increase in receipts of £16,867. The substantial increase in gas sales consequent upon the reduction in the price of gas in April, 1905, had been fully maintained; and a good increase in the number of consumers had been secured during the year. These increases, he was glad to say, had continued in the early months of the present year, so far as any returns had been received from Monte Video. While dealing with this question of the price of gas and the good results that had been obtained from the last reduction, it might be as well to enlarge on the paragraph in the report which stated that the Board had had under consideration the question of a further reduction. The Directors were at one in their belief that it was to the interest of the Company to supply gas at as low a rate as possible, because by so doing they broadened the basis of their supply; and if the financial position had permitted it, they would have reduced the price at an earlier date than they did. With the results of the past year before them, the Board felt that, by reducing the price again for lighting, and charging a specially low rate for gas-cookers, heating-stoves, engines, and industrial purposes, they would obtain a large increase in the sales of gas. The use of gas for all these purposes was increasing in a satisfactory manner; and though it had been hard work to get the consumers to cook by gas, they seemed now to realize that it was economical, clean, a great time-saver, certain in results, and generally satisfactory; and the Directors looked with every confidence, not only to a large increase in the quantity of gas sold for this purpose, but also for lighting. It was the cheapest of all illuminants, when compared light for light; and the artistic fittings they had on sale for the inverted gas-light would, he thought, please the most exacting. The increase in revenue had naturally led to an increase in expenditure amounting to £7163. A larger quantity of coal had to be carbonized to meet the greater sales, and wages had also increased, besides which the expenditure in the dock department was much heavier owing to the larger quantity of work handled. The net result was an increase in profit of £9702, which he thought the proprietors would consider satisfactory. The items in the profit and loss account called for little explanation. The profit on exchange had increased by £233; a larger amount having been remitted here, and the rate of exchange having been in their favour throughout the year. The provision for bad debts was £286 more than in the previous year; but with an increased business this was inevitable. The other transfers on the debit side he had already dealt with; and in view of the further reduction in the price of gas, the Board considered it prudent to strengthen the reserves. He concluded by moving the adoption of the report and accounts.

Mr. CHARLES HUNT seconded the motion.

Mr. J. T. EDMONDS asked whether it was necessary to set aside so large a sum as £5000 to the contingency account. They were, he said, all delighted to see the increase in the profit of nearly £10,000; and he, for one, had been rather in hopes that they were coming back to the happy period when they had 12s. or 14s. per share dividend every half year. Therefore he was somewhat disappointed to see so much as £5000 go to the contingency fund, and £4240 to reserve, in addition to £1000 to the reserve for renewals. But for this, the shareholders might have had 4 or 4½ per cent. dividend, instead of the 3½ per cent. On the nature of the report he had nothing but congratulation; and he was sure the business was admirably conducted, as it had been for many years past.

Mr. H. DAVEY inquired how many customers the Company had, and whether there had been a material increase during the past two or three years. He asked if there was much building going on, so as to give promise of more consumers; and also whether the Company used prepayment meters.

The CHAIRMAN replied that they had slot-meters adopted to the native requirements—that was, to take 5 cents. He entirely agreed with the remarks made by Mr. Edmonds. It would have been most gratifying to the Board to recommend a higher dividend; but, as he had endeavoured to explain, they thought that prudence was the better policy. They relied upon the contingency fund to make good any loss there might be on the investments of the reserve fund. As this was the first year in which they had begun to reap the fruits—it was a considerable reaping, he admitted—of the policy to which he had referred, the Board felt sure the shareholders would support them now, as they had in the past, in the prudent course they had adopted. He thought they would agree with him that the first thing to do was to put the contingency fund on a good basis. They had gone through a troublous time when they lost the whole of the public lighting; but to-day, owing to the conservative principles adopted, the business was in a better position than it had been for some time. There could not be a worse policy than to advance the dividend unless they felt absolutely certain they would not have to reduce it again. As to Mr. Davey's questions, the object of reducing the price was to attract the multitude. They had at the present time something more than 5000 consumers; but this, to his mind, was a comparatively small proportion of the number they might obtain if the gas was cheaper. The aim of the Board was to so enlarge their sphere that, instead of gas being the luxury of one man it should be the necessity of twenty. A company on a basis of this kind, who supplied the wants of the multitude, were in a much better position than one supplying a luxury. The Directors had taken every step they could to push the sale of gas and to show its advantages; and if the Company did not attain success, at any rate they deserved to.

Mr. DAVEY: Is the town increasing?

The CHAIRMAN replied that it was increasing no doubt; but he did not like to rely too much on that, because the Government now supplied electric light themselves.

Mr. GILES: Can the Municipality dictate to you?

The CHAIRMAN answered that they had no concession now; it expired some time ago. They were a free trading Company.

The motion was then carried.

On the proposition of the CHAIRMAN, seconded by Mr. ROBERT MORTON, a dividend was declared of 8s. per share, making with the interim dividend of 6s. per share (less income-tax) a dividend of 3½ per cent. for the year.

Moved by the CHAIRMAN, and seconded by Mr. JOHN MEWS, Mr. Morton was re-elected a Director, as was also the Chairman, on the proposition of Mr. HUNT, seconded by Mr. MORTON.

Proposed by Mr. W. HUGHES, and seconded by Mr. ROLANDI, the Auditors (Messrs. G. Sneath and L. E. Halsey) were re-appointed.

A hearty vote of thanks was, on the motion of the CHAIRMAN, seconded by Mr. MORTON, accorded to the officers and staffs, both here and in Monte Video.

Mr. EDMONDS, in proposing a vote of thanks to the Chairman and

the Directors, said that at the time he referred to the amount of £5000 being placed to the contingency fund, he had not had the advantage of hearing all the remarks of the Chairman. He, however, understood now that the fund was really to provide for depreciation in the investments, which he saw figured at about £48,000. He was sure the Board did everything in their power to promote the interests of the Company.

Mr. GILES having seconded the motion, it was heartily carried; and with the CHAIRMAN'S acknowledgment the proceedings came to an end.

METROPOLITAN WATER BOARD.

Resignation of the Chairman.

At the Meeting of the Board on Friday, Sir Melvill Beachcroft resigned the position of Chairman, which he has held since the constitution of the Board five years ago. He said that he found it was no longer possible to make the pecuniary sacrifice which such devotion to the public service entailed. He had cherished the hope of remaining their Chairman until the Board had overcome the unpopularity which undeservedly attached to it in regard to the Charges Act, and until the great scheme for providing adequate storage to meet all the future wants of the Metropolis had been inaugurated. He, however, did not doubt that his successor would realize both these aspirations. On looking back at the Board's work since the start, he could not but regard it with satisfaction. The Deputy-Chairman (Mr. E. B. Barnard, M.P.) then took the chair, and moved that the resignation be accepted, and that the Board tender Sir Melvill hearty thanks for his invaluable services. Lord Welby seconded the resolution, which was carried unanimously. The Board will meet next Friday to elect a successor.

The Appeal and Assessment Committee presented a report on the question of rebate from the domestic water-rate, and recommended—"That premises which otherwise comply with the qualifying conditions for rebate under section 9 of the Metropolitan Water Board (Charges) Act, 1907, shall not be wholly deprived of such rebate on the ground only that a portion of such premises is charged with the payment of inhabited house duty, but that the rebate be allowed in respect of so much of the premises as is not charged with the payment of such duty." Lord Welby, on behalf of the Finance Committee, moved as an amendment—"That, without expressing an unfavourable view on the general merits of the recommendation of the Appeal and Assessment Committee as to the qualifying condition for a rebate under section 9 of the Metropolitan Water Board (Charges) Act, 1907, the loss of £7000 of annual income incident to the proposal is one that should not be entertained by the Board until they have had further experience of the working of the Charges Act, and that the recommendation be therefore referred back to the Committee for further consideration." The amendment was lost, and the recommendation adopted.

Referring to the first of the matters noticed above, the "Pall Mall Gazette" writes: The retirement of Sir Melvill Beachcroft from the chairmanship of the Metropolitan Water Board, which he has held since the institution of that body, evoked unanimous and sincere expressions of regret from his colleagues. Sir Melvill has been one of the most devoted servants of the Metropolis in its local government; and, in adding the supervision of the new water system to his duties as a County Councillor, he has borne for the last five years an exceptionally heavy load of public responsibility. For private reasons he has now felt compelled to diminish his labours; but we may express the hope that his work on the County Council will continue uninterrupted, and that he will still bear a part in the administration of London's affairs upon those lines of Municipal Reform of which he has been such a constant and persevering advocate.

NOTES FROM SCOTLAND.

From Our Own Correspondent.

Saturday.

On Thursday of this week, application was made to Lord Johnston, in the Court of Session, on behalf of Messrs. James Muir and Son, Limited, who are suing the Edinburgh and Leith Gas Commissioners for damages for the pollution of their brewery well, for a commission and diligence to recover documents in view of the proof, which is fixed for June 23. What was asked was: (1) Plans and other documents showing the position of the drains, &c., in the defenders' property; (2) statements made by servants of the defenders at or about the time the defenders removed the carburetted water-gas saturator, having reference to the polluting matter discovered in or in proximity thereto; and (3) what the defenders had done in the way of removing the pollution. Mr. Constable, for the pursuers, said it was from a report in a newspaper that they learned that the defenders had discovered the source of pollution. They went down and found them removing the outer basin of an old gasholder; but they had not a proper opportunity of determining what the source of the pollution was. The place was now filled with water, to wash out the polluting material; and what he wanted to discover was how the polluting matter had distributed itself in the surrounding substance and into the strata. Lord Johnston remarked that the pursuers' business was to prove the effect of the pollution, and he did not see what they had to do with where it came from. Mr. Constable said the whole question now was the amount of damages. This depended upon the probable duration of the pollution; and on this point the extent of the pollution, and the precise area which had been saturated, became of very great importance. The ground on which he asked for the information was that, by the operations of the defenders, the *status quo* had been entirely altered. The means of information no longer existed; and reports made by the officials of the defenders at the time were the best evidence obtainable as to what was discovered. On behalf of the defenders, Mr. J. Duncan Millar pleaded that the reports of the officials were confidential. Lord Johnston indicated his intention to grant authority to recover certain written documents, in terms of an interlocutor, which he would adjust.

The Special Committee of the Dundee Town Council upon the Reorganization of Public Offices met on Tuesday to consider as to the post of City Chamberlain and Gas Treasurer, which the Council have agreed shall be combined. Mr. Scrymgeour moved that the salary for the post be £300 per annum. This was not seconded. Mr. Robertson moved, and Mr. Speed seconded, that the salary be £500. This was agreed to; Mr. Scrymgeour dissenting. It was resolved to call for applications forthwith, and, on these having been received, to prepare a

GAS COMPANIES' STOCK AND SHARE LIST.

Referred to on p. 490.

Issue.	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.				£ s. d.
500,000	10	Apl. 10	10	Alliance & Dublin 10 p.c.	19—20	+½	5 0 0
268,324	10	,,	7	Do. 7 p.c.	13—14	..	5 0 0
310,000	Stk.	Jan. 16	4	Do. 4 p.c. Deb.	100—103	..	3 17 8
200,000	5	Oct. 30	6¼†	Bombay, Ltd.	6¼—6⅝	..	4 16 4
40,000	5	,,	6¼†	Do. New, £4 paid	4⅜—5	..	5 4 0
50,000	10	Feb. 27	14	Bourne-mouth Gas and Water	10 p.c.	..	4 3 0
51,810	10	,,	7	B 7 p.c.	16¼—16⅝	..	4 3 7
53,200	10	,,	6	Pref. 6 p.c.	14—15	..	4 0 0
380,000	Stk.	,,	12½	Brentford Consolidated	240—245	..	5 2 1
300,000	,,	,,	9⅜	Do. New	180—185	..	5 2 8
50,000	,,	,,	5	Do. 5 p.c. Pref.	118—123	..	4 1 4
206,250	,,	Dec. 13	4	Do. 4 p.c. Deb.	100—105	..	3 16 2
220,000	Stk.	Mch. 12	11½	Brighton & Hove Orig.	202—207	..	5 5 8
246,320	,,	,,	8½	Do. A. Ord. Stk.	152—157	..	5 5 1
460,000	20	Mch. 27	10	British	41½—42½	..	4 14 1
104,000	Stk.	Feb. 13	6	Bromley, Ord. 5 p.c.	116—119	..	5 0 10
165,700	,,	,,	4⅜	Do. do. 3½ p.c.	86—89	..	5 1 2
500,000	10	May 14	7	Buenos Ayres (New) Ltd.	10⅝—11¼*	−⅛	6 4 5
250,000	Stk.	Dec. 13	4	Do. 4 p.c. Deb.	93—95	..	4 4 3
150,000	20	Mch. 12	7½	Cagliari, Ltd.	24—25	−1	5 16 0
100,000	10	—	—	Cape Town & Dis., Ltd.	4—6	..	—
100,000	10	Apl. 26	4½	Do. 4½ p.c Pref.	7—9	..	5 0 0
50,000	50	May 2	6	Do. 6 p.c. 1st Mort.	46—48	..	6 5 0
100,000	Stk.	Dec. 30	4½	Do. 4½ p.c. Deb. Stk	92—94	..	4 15 9
157,150	Stk.	Feb. 27	5	Chester 5 p.c. Ord.	111—113	..	4 8 6
1,491,280	Stk.	Mch. 12	5⅛	Commercial 4 p.c Stk.	104—109	..	4 15 5
560,000	,,	,,	5	Do. 3½ p.c. do.	100—105	..	4 15 3
475,000	,,	Dec. 13	3	Do. 3½ p.c. Deb. Stk.	82—84	..	3 11 5
800,000	Stk.	,,	6⅜	Continental Union, Ltd.	115—120	..	5 8 4
200,000	,,	,,	7	Do. 7 p.c. Pref.	140—145	..	4 16 7
460,170	Stk.	—	5⅜	Derby Con. Stk.	122—123	..	4 9 5
55,000	,,	—	4	Do. Deb. Stk.	105—105	..	3 16 2
148,995	,,	Mch. 31	5	East Hull 5 p.c. Ord.	100—103	..	4 17 1
486,090	10	Jan. 30	12	European, Ltd.	23—24	..	5 0 0
354,060	10	,,	10	Do. £7 10s. paid	16½—17⅛	..	5 2 10
15,182,590	Stk.	Feb. 13	4½	Gaslight and Coke	4 p.c. Ord.	54—55	−⅛	4 12 7
2,600,000	,,	,,	3⅜	3½ p.c. max.	87—90	..	3 17 9
3,799,735	,,	,,	4	4 p.c. Con. Pref.	106—109	..	3 13 5
4,193,975	,,	Dec. 13	3	3 p.c. Con. Deb.	83—85	..	3 10 7
258,740	Stk.	Mch. 12	5	Hastings & St. L. 3½ p.c.	93—95	..	5 2 0
82,500	,,	,,	6⅜	Do. do. 5 p.c.	112—115	..	5 13 1
70,000	10	Apl. 29	11	Hongkong & China, Ltd.	18—19	−⅛	5 15 9
4,940,000	Stk.	May 14	8	Imperial Continental	175—177*	..	4 10 5
473,600	Stk.	Feb. 13	3⅜	Do. 3½ p.c. Deb. Red.	93—95	..	3 13 8
195,242	Stk.	Mch. 12	6	Lea Bridge Ord. 5 p.c.	113—118	..	5 1 8

Issue	Share.	When ex-Dividend.	Dividend or Dividend & Bonus.	NAME.	Closing Prices.	Rise or Fall in Wk.	Yield upon Investment.
£			p.c.				£ s. d.
561,000	Stk.	Feb. 27	10	Liverpool United A	227—229	..	4 7 4
718,100	,,	,,	7	Do. B	163—165	..	4 4 10
306,083	,,	Dec. 30	4	Do. Deb. Stk.	106—108	..	3 14 1
152,736	Stk.	Feb. 13	7⅜	Maidstone 5 p.c.	136—141	..	5 8 2
75,000	5	Nov. 28	5	Malta & Medn., Ltd.	4¼—4⅜	..	5 5 3
560,000	100	Apl. 1	5	Met. of 5 p.c. Deb.	102—102	..	4 18 0
250,000	100	,,	4½	Melbourne 4½ p.c. Deb.	99—101	..	4 9 1
541,920	20	Nov. 14	3½	Monte Video, Ltd.	11— 2	..	5 16 8
1,775,892	Stk.	Feb. 27	4⅜	Newc'tle & G'tesh'd Con.	107—108	..	4 5 8
418,462	Stk.	Dec. 30	3½	Do. 3½ p.c. Deb.	90—92	..	3 16 1
15,000	10	Feb. 27	10	North Middlesex 10 p.c.	23—21	..	4 15 3
55,940	10	,,	7	Do. 7 p.c.	13⅜—14⅝	..	4 16 7
300,000	Stk.	Apl. 29	8	Oriental, Ltd.	140—143	..	5 11 11
60,000	5	Mch. 27	7	Ottoman, Ltd.	6—6⅜	..	5 7 8
398,490	5	Apl. 29	7	Primitiva Ord.	6¼—6⅝	..	5 5 3
796,980	5	Jan. 30	5	Do. 5 p.c. Pref.	4⅜—4½	..	5 5 3
488,900	100	Dec. 2	4	Do. 4 p.c. Deb.	93—95	..	4 4 3
1,000,000	10	Apl 29	8	River Plate Ord.	12⅛—13⅜	−¼	5 18 6
312,650	Stk.	Dec. 30	4	Do. 4 p.c. Deb.	93—95	..	4 4 3
250,000	10	Apl. 10	8	San Paulo, Ltd.	13⅜—14	..	5 14 4
125,000	50	Jan. 2	5	Do. 5 p.c. Deb.	50—52	..	4 16 2
135,000	Stk.	Mch. 12	10	Sheffield A	245—247	..	4 1 0
209,984	,,	,,	10	Do. B	245—247	..	4 1 0
523,500	,,	,,	10	Do. C	245—247	..	4 1 0
70,000	10	Nov. 14	10	South African	14⅜—15⅝	..	6 9 0
6,429 895	Stk.	Feb. 13	5⅛	South Met., 4 p.c. Ord.	118—120	..	4 8 10
1,895,445	,,	Jan. 16	3	Do. 3 p.c. Deb.	83—85	..	3 10 7
209,820	Stk	Mch. 12	8	South Shields Con. Stk.	154—156	..	5 2 7
605,000	Stk.	Feb. 27	5⅜	S'th Suburb'n Ord. 5 p.c.	116—119	..	4 9 7
60,000	,,	,,	5	Do. 5 p.c. Pref.	118—121	..	4 2 8
117,058	,,	Jan. 16	5	Do. 5 p.c. Deb. Stk.	120—125	..	4 0 0
502,310	Stk.	May 14	5	Southampton Ord.	105—110*	..	4 10 11
120,000	Stk.	Feb. 27	6⅜	Tottenham A 5 p.c. and B 3½ p.c.	20—125	..	5 8 0
398,940	,,	,,	5⅛		103—106	..	4 19 1
149,470	,,	Dec. 13	4	Edmonton 4 p.c. Deb.	59—102	..	3 18 5
182,380	10	Dec. 30	8	Tuscan, Ltd.	10¼— 0⅝	..	7 8 10
149,900	10	Jan. 2	5	Do. 5 p.c. Deb. Red	99—101	..	4 19 0
193,742	Stk.	Feb. 27	5	Tynemouth 5 p.c. max.	106—107	..	4 13 6
255,636	Stk.	Feb. 13	6⅜	Wandsworth and Putney B 3½ p.c.	128—133	..	4 17 9
80,075	,,	Dec. 30	3	3 p.c. Deb. Stk.	73—78	..	3 16 11
845,872	,,	Feb. 27	5⅜	West Ham 5 p.c. Ord.	100—103	+1	4 19 6
185,000	,,	,,	5	Do. 5 p.c. Pref.	118—120	..	4 3 4
228,300	,,	Dec. 30	4	Do. 4 p.c. Deb. Stk.	102—107	..	3 14 9

† Next dividend will be at this rate. Prices marked * are "Ex div."

short leet for submission to the June meeting of the Council. It was pointed out in the Committee that prior to the offices having been conjoined in the person of Mr. A. W. Stiven, the salaries of the Gas Treasurer and the City Chamberlain were £400 each. The City Chamberlain out of his emoluments, however, paid £100 a year for a clerk; so that, taking the cost prior to Mr. Stiven's appointment at £700, there will be a saving of £200 a year in giving effect to the recommendation of the Committee.

The Gas Committee of the Dundee Town Council on Tuesday had before them an estimate and plans, prepared by Mr. A. Yuill, the Engineer, for new purifying plant at the gas-works—to cost £13,500. These were approved, and authority was given to take in tenders for the work.

On the morning of Wednesday last, a fire was discovered to have broken out in the meter-house in the old gas-works in Kilmarnock. The Engineer visited the house about nine o'clock, when everything appeared to be in order. Shortly afterwards, however, two slight explosions were heard, and flames were observed shooting through the windows of the meter-house. Both the Managers—Messrs. Wm. and Charles Fairweather—were in the works at the time; and under their direction the employees did what they could to check the outbreak. The Fire Brigade were summoned; but they were unable to do more than prevent the fire from spreading. The roofs of both the meter and the exhauster houses were demolished, and fell in. The loss, amounting to about £500, is fully covered by insurance. It is considered probable that there had been an undetected leak of gas, and that it had been ignited by a pilot-light in one of the burners.

The annual meeting of the shareholders of the Stonehaven Gas Company was held on Monday. From the report of the Directors it appeared that the profit for the year amounted to £688, out of which it had been agreed to pay a dividend of 3s. per share, with a bonus of 6d. per share. The Chairman—Mr. T. Mitchell, senior—made some very interesting statements. He congratulated the Company upon their successful year's working, and recounted what they had done in the way of laying larger pipes, to enable them to meet the increased demand for gas. The Directors, at their last monthly meeting, he went on to say, on looking over the rents charged for cookers, decided to relieve all those who had paid rent for 15 years, and also all who may continue to pay up to 13 years, of any rent charge. As he was about to retire from the directorate, there had been put into his hands some figures showing the progress since he became a Director 49 years ago. In 1859-60, the gas made amounted to 2,143,000 cubic feet; the largest make in one week being 82,000 cubic feet. In 1907-08, the gas made amounted to 16,017,000 cubic feet, and in one day 79,000 cubic feet. The price of gas in 1860 was 9s. per 1000 cubic feet; at present it was 3s. 6d. and 3s. 1d. They made nearly as much gas in one day now as they did in a week when he joined the Board. A hearty vote of thanks to the Chairman for his services was formally moved and cordially agreed to.

A special meeting of the Directors of the Banchory Gaslight Company was held last week, the principal business at which was the receipt of the resignation of the Gas Manager—Mr. R. Forrest. The Chairman—Councillor A. Ewan—said the Directors realized that Mr. Forrest's resignation meant that they were to be deprived of the services of a really excellent Manager, and one whose place they would find it very difficult to fill. Mr. Forrest came to them six-and-a-half years ago; and from that time to the present evidences of his capable management were to be found in the annual reports and balance-sheets of the Company, and also in many alterations and improvements in and around the works. During the term of Mr. Forrest's management, the quantity of gas made annually had increased from 1,546,000 to 2,500,000 cubic feet; the leakage had decreased from 12 to 1·6 per cent.; and the price of gas had been reduced from 7s. 11d. to 6s. 8d. per 1000 cubic feet. The profits of the Company had increased from £110 to £246 a year. His close attention to duty, and his anxiety to do his very best for the interests of his employers, had been outstanding features of Mr. Forrest's character. The resignation was accepted with reluctance and regret. It does not take effect immediately; and it may be some time before his successor is appointed.

At the Grangemouth Town Council on Monday, Mr. White proposed that a separate note should be kept of gas consumed in gas-cookers. The Manager reported that the number of cookers in use on May 15, 1907, was 298, of the value of £915; that the revenue from the hire of them was £50; and the cost of repairs during the year was £2 5s. 7d. The number of cookers on hire at present is 339, of the value of £935; the estimated revenue is £63; and the cost of repairs and material for fixing is £12 2s. 10d. The only means of ascertaining the actual revenue for gas consumed in cookers would be by having separate meters put in; and this could not be done for less than £300. Considering that gas was consumed in cookers during the daytime, thereby keeping the number of retorts in use more fully employed without any extra expense whatever, the cost of producing the gas was consequently reduced.

The members of the Halifax Gas Committee are to visit the Linacre works of the Liverpool United Gas Company. Their purpose is to inspect the Davis-Neill yellow prussiate plant in operation there; the question of the installation of similar plant at Halifax being under the consideration of the Committee.

It is stated that the Directors of the Welsbach Incandescent Gas-Light Company will recommend for the past year the usual dividend on the preference shares at the rate of 6 per cent. per annum, and a dividend on the ordinary shares at the rate of 3 per cent. per annum. A further sum of £10,000 will be placed to reserve, bringing this fund up to £100,000, and £5300 will be carried forward. Twelve months ago, the dividend on the ordinary shares was at the rate of 5 per cent. per annum, £15,000 was placed to reserve, and £3130 was carried forward.

HAVEN'T YOU—

noticed that Consumers grow more particular every year—that, whereas formerly they merely asked for a Gas Cooker, it is now invariably—"A **'Eureka'** please"? The fact is they **know** it is just that word which makes all the difference. Experience has shown them there is only **one** "Eureka," and since the hire for a "Eureka" is no more than for an ordinary Cooker—they naturally insist on having **the best** the world can produce—a "Eureka." If you are not stocking "Eurekas" let us send one for inspection.

WRIGHT'S TREBLE "EUREKA" COOKING RANGE.

The most effective and economical Cooking Range for Hotels, Restaurants, and similar Establishments. **All** parts are absolutely interchangeable, and in every detail the Material, Workmanship, Finish express Wright's degree of excellence—THE HIGHEST.

JOHN WRIGHT & CO.,
ASTON, BIRMINGHAM.

CURRENT SALES OF GAS PRODUCTS.

Sulphate of Ammonia. LIVERPOOL, *May* 23.

There has been a fair amount of demand for immediate delivery, but supplies have been sufficient to cover it, and prices have been barely maintained. The closing quotations are, consequently, £12 5s. per ton f.o.b. Hull, £12 7s. 6d. per ton f.o.b. Liverpool, and £12 8s. 9d. to £12 10s. per ton f.o.b. Leith. Home demand has been in very limited compass. There has been no material change in the forward position. There are more sellers in evidence; and as buyers remain for the most part indifferent, the value of July-December delivery can hardly be put higher than £12 5s. per ton f.o.b. For June delivery, spot prices are not obtainable.

Nitrate of Soda.

This article is quiet, and spot prices are 10s. and 10s. 3d. per cwt. for 95 per cent. and refined qualities respectively.

Tar Products. LONDON, *May* 25.

The markets are still quiet in tone, and business is difficult to negotiate. Most buyers appear well covered for some time ahead, and prepared to wait before doing any further business. Pitch is very quiet. London makes can be purchased at 20s.; while on the east coast under 19s. is reported to have been accepted for delivery to the end of June. In South Wales, very low figures have been accepted for prompt delivery and for delivery to the end of the year, and all over 1909. Creosote is quiet, and business has been done in the North at 2d., *ex* makers' works, for delivery to the end of the year. Benzol is depressed; but solvent naphtha appears to be a trifle firmer in tone. 60's carbolic are quiet, and Continental consumers now refuse to make offers. Naphthalene is unchanged; but salts are dull and difficult of sale.

The average values during the week were: Tar, 11s. 6d. to 15s. 6d. *ex* works. Pitch, London, 20s.; east coast, 18s. 9d. to 19s.; west coast, 18s. 9d. to 19s. 9d. f.a.s. Benzol, 90 per cent., London 8d., North 7½d., casks included; 50-90 per cent., London 7¾d., North 7¼d., casks included. Toluol, London 8d., North 7½d., casks included. Crude naphtha, in bulk, London 3½d. to 3¾d., North 3¼d. to 3⅜d.; solvent naphtha, London 9¾d. to 10d., North 8¾d. to 9¼d., casks included; heavy naphtha, London 9½d. to 10⅛d., North 8¾d. to 9⅜d., casks included. Creosote, London 2d. to 2⅛d., North 2d. to 2⅛d., in bulk. Heavy oils, 2⅝d. to 2¾d., in bulk. Carbolic acid, 60 per cent., east coast 1s. 6⅛d. to 1s. 6⅜d., west coast 1s. 5⅞d. to 1s. 6⅛d., casks included. Naphthalene, £4 10s. to £8 10s.; salts, 30s. to 32s. 6d., packages included and f.o.b. Anthracene, "A" quality, 1⅛d. to 1¾d. per unit, packages included and delivered.

Sulphate of Ammonia.

This article is easier, and the great demand for prompt delivery appears to have eased off for the time being. The principal London Gas Companies still quote £12 10s. for prompt; but outside makes have been sold upon Beckton terms at £12 5s. In Hull, the market is £12 5s. to £12 6s. 3d., and in Liverpool, £12 6s. 3d. to £12 8s. 9d. In Leith, manufacturers ask £12 10s., but cannot do much business at this figure.

COAL TRADE REPORTS.

Lancashire Coal Trade.

It is only within the last few days that the weather has become anything like settled to the extent of affecting the household consumption of coal. Less fuel is now required. Colliery proprietors no doubt foresaw the change, for miners have latterly worked only about four days per week. Less mining for house coal diminishes the supply of slack. Prices, however, have not yet been reduced in the Manchester district, although it is likely that, with the 1st prox., some concession will be made. In West Yorkshire there has been a reduction of 1s. per ton. Lancashire coalowners will probably follow this lead, if not wholly, to some extent. There has been some easement in shipping coal; but it is not general. Some collieries are very busy with shipping orders, especially in house coal for export. Gas coal and cannel contracts in Lancashire are being settled on terms which work out at about 2s. per ton over 1906 prices, or 6d. a ton less than those for 1907. This applies chiefly to large contracts. The same reduction has been made in the South-West Yorkshire coalfields. Collieries outside the Association have been doing gas coal business at 9d. and even 1s. per ton reduction. Furnace and foundry coke is easier to purchase; but coke for the household is dearer.

Northern Coal Trade.

There is continued activity in the northern coal trade, as the heavy export demand makes up for the moderate home consumption at this season of the year, and also for the loss of trade which the strikes cause. In the steam coal trade, best Northumbrian kinds are quoted from 14s. to 14s. 3d. per ton f.o.b., according to the time of delivery stipulated, second-class steams from 12s. 6d. to 13s., and steam smalls from 6s. 6d. to 7s. 6d. The latter sort are more plentiful. The output is, however, well taken up in general, and it is full, both for steam and other qualities. In the gas coal trade, the local demands are moderate; but the shipments are above the average, and the collieries are working well. Durham gas coals are being quoted from about 10s. 6d. to 11s. 6d., according to quality, for the usual kinds; while "specials" are quoted up to 12s. 6d. per ton f.o.b. More of the yearly contracts for gas companies have been fixed, including some for the Tyne Company named last week. It is believed that the prices are between figures that are equal to from 10s. to 10s. 6d. per ton f.o.b.; but there

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CLEANER, BETTER,
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THAN COAL.

Size 16 in. by 16 in. by 3½ in.

FOR SCONES,
MUFFINS, PANCAKES, &c.

PRICE - - - - - - - - 10/6

IF WITH TOP GROUND & POLISHED 12/-

R. & A. MAIN, Ltd.,
LONDON, GLASGOW, & FALKIRK.

is not much exact statement until the contracts are fully settled, and, of course, the location of the collieries has much to do with the exact prices that will be left for the coal at the pit mouth. Coke is steady; the demand being fairly good. The production of gas coke is less than it was. Good gas coke is quoted from 14s. 6d. to 15s. per ton f.o.b. Tyne or Wear.

Scotch Coal Trade.

Trade shows no improvement. For export the demand continues good; but home consumption is not so good as might be desired. As for some weeks past, small sorts are the most difficult to dispose of. In consequence of this, there is a considerable amount of idle time at the collieries. The prices quoted are: Ell 10s. 6d. to 12s. per ton f.o.b. Glasgow, splint 10s. 9d. to 11s., and steam 10s. 3d. to 10s. 6d. The shipments for the week amounted to 294,839 tons--a decrease of 12,636 tons upon the previous week, but an increase of 16,328 tons upon the corresponding week of last year. For the year to date, the total shipments have been 4,806,524 tons—a decrease of 353,325 tons upon the corresponding period of 1907.

Gas Coal Combination.

The "Sheffield Independent" says: "A difference of opinion has arisen in the district of the federated area which comprises the gas-coal producing pits of South Yorkshire, North Derbyshire, some collieries in Nottinghamshire, and some in Staffordshire. It was decided early in the season to endeavour to arrange gas coal contracts for the twelve months commencing in July on the same basis as last year; but as this has been found impracticable, a reduction of 6d. per ton was decided upon. A strenuous effort is being made to maintain this price; but some members of the Association are very unsettled, and are disposed to leave its ranks if the concession is not increased to 1s. per ton. Meanwhile, gas companies are playing a waiting game."

Price of Gas at Dartmouth.—A letter, signed "A Consumer," has appeared in the "Western Morning News," calling attention to the charges for gas at Dartmouth when taken through ordinary and slot meters. The writer says: "A certain portion of the consumers are paying 4s. 2d. per 1000 cubic feet, and others only 3s. 6d.; the former using quarterly meters and the latter slot meters. The following is only worked out roughly; but it is sufficient to show the difference, and I have taken two different readings. Slot meter: Reading of meter: Consumed, 3600 cubic feet; gas bill, 15s. 7d. Rent of meter, 1s. 6d.; rent of stove, 1s. 9d.—3s. 3d. Leaving charge for gas alone, 12s. 4d.; price per 1000 feet, about 3s. 6d. Quarterly meter: Consumed, 5400 cubic feet, at 4s. 2d., £1 2s. 6d.; rent of meter, 1s. 6d.; rent of stove, 1s. 9d.—£1 5s. 9d. In the case of the quarterly meter, by paying the bill before the end of the month there is a discount of 2d. per 1000 feet allowed; but even then, there is a difference of 6d. per 1000 feet, which should not be."

A Mistaken Notion.

Many users of penny-in-the-slot gas-meters in Manchester are under the impression that if new copper coins are utilized they obtain thereby a larger supply of the illuminant than would be the case with a thin and worn penny piece. The matter has been raised by a correspondent of the "Manchester Guardian." On his way home on a Sunday night, he was accosted by a housewife standing at her door. "Please," she said, "could you change me a sixpence? I am all in the dark; and I have not a penny in the house to put in the gas-meter." As he obligingly counted out the coppers, the woman added: "I will have the newer ones, if it is all the same to you. You see, you get more gas with the new penny than with the old one; they weigh heavier, and get you better measure." According to an official at the Corporation Gas-Meter Department, this theory is widely held by consumers who have penny-in-the-slot meters, though, of course, there is nothing in it, the thin penny getting just as much gas as the thicker one—that is, in Manchester, 30 cubic feet of gas.

Gas Supply in Philadelphia (Pa.).

According to a recent message of the Mayor of Philadelphia (Pa.), the conditions of gas supply in the city, under the *régime* of the United Gas Improvement Company, are of a highly satisfactory character. The Mayor said: "The renewal of the United Gas Improvement Company's lease has made it possible for the city to not only receive an income, but courteous and prompt treatment of their patrons—a condition that is universally appreciated; and the financial benefits are made clear by the following statement: In compliance with the lease that the city has with the Company, the city has received as rentals, up to Dec. 31, 1907, $5,224,934; value of gas consumed for street lighting purposes, at 45 c. per 1000 cubic feet, which is probably a fair estimate for the city's consumption to Dec. 31, $2,234,536; value of gas consumed in public buildings, at 45 c. per 1000 cubic feet, $434,214; amount expended on betterments, in actual cash payments, by this Company, that revert to the city without cost, according to the terms of the lease, $13,454,844. The cost of lighting, cleaning, and extinguishing gas-lamps throughout the United States varies from $6 to $9 per annum, according to whether the lamps are scattered or concentrated. Assuming that $7 was the average cost per annum, the city is also saved, on this character of work, $1,456,560. The total value to the city to Dec. 31, is $22,803,088, which does not include the income or improvements of the future—those for 1908 being estimated at $1,200,000."

New Reservoir for Fairfield.—A new reservoir constructed at Brownedge for the supply of Fairfield, near Buxton, was formally inaugurated last week by Mr. Wall, the Chairman of the Urban District Council. It has a capacity of 4 million gallons, and has cost £8000.

YESTERDAY

His Majesty the King

and

French President

inspected

our

GAS APPARATUS

at Franco-British Exhibition.

Advertisement of the RICHMOND GAS STOVE & METER CO., LTD.

London Offices and Show-Rooms: 132, Queen Victoria Street, E.C. General Offices and Works: Warrington, &c.

A Deficit at Morecambe.

At the recent Quarterly Meeting of the Morecambe Town Council, the report of the Gas Department was submitted, and disclosed a deficit of £1981; it being explained by the Chairman of the Gas Committee (Mr. A. W. Gorton) that the meters had been read a month earlier this year, which would account for about £1000 of the deficit. It had been found that the stock taken over by the new Manager (Mr. H. Blakey) from the late Manager did not tally; and after an interview with the previous Manager, the Committee had arrived at the conclusion that the pricing of the stock had not been carried out with sufficient care. This accounted for about £200. He made no reflection whatever upon the late Manager. These and other matters would actually reduce the deficit to about £150. Mr. Birkett expressed the opinion that the Gas Department was over-capitalized, and would not pay without a great increase in the number of consumers. It was resolved that all slot meters where the receipts are less than 15s. a year be taken out, unless the consumer pays the difference between the amount of the actual receipts and the sum of 15s.

Gas-Works Results at St. Ives (Cornwall).

The Gas Committee of St. Ives (Cornwall), in their report to the Town Council on the working of the gas undertaking for the year to March 31, state that the quantity of coal carbonized was 937 tons, an increase of 109 tons when compared with the previous year; while the quantity of gas made was 9,697,000 cubic feet, or an increase of 962,403 feet. The amount of gas sold and accounted for was 8,819,100 cubic feet, or an increase of 1,018,400 feet; and the quantity unaccounted for was 877,930 cubic feet, being a loss of 9 per cent. on the make, which was a decrease of 1·69 per cent. as compared with the previous year. The make of gas was 10,348 cubic feet, and the amount sold and accounted for 9412 feet, per ton of coal carbonized. There were 42 meters added; the total number now fixed being 566—64 of which are prepayment meters. There are 10 gas-engines, 79 cookers, 48 boiling-stoves, and 14 heating-stoves supplied by separate meters; and 20 of the cookers belong to the Corporation. The total mileage of mains is 6¼. The revenue account shows an increase from sales of gas, &c., of £314, and an increase in expenditure of £444; the gross profit being £534. After paying principal and interest, there remains a net profit of £146.

Portsmouth Water Company.

In moving the adoption of the report (noticed in last week's "JOURNAL," p. 456) at the half-yearly meeting of the Company on Thursday, Mr. William Grant, J.P., the Chairman, in explanation of the balance for carrying forward being rather below the normal sum, pointed out that the alteration of mains at the Copnor railway bridge, and other works, had been defrayed from revenue. The filtration works which had been approved by the shareholders, at a cost of £73,200, had been reported upon by the Engineer as making very satisfactory progress, though only £4800 had as yet been drawn on their account. The fact was that the preliminary work connected with the filtration was chiefly excavation, and, therefore, of a comparatively inexpensive description; but there were 26,000 yards of excavation to be accomplished, and the increase in the storage accommodation from 6 million to 15 million gallons would be most valuable to the Company. The expense of replacing out-of-date machinery at the works at Bedhampton had also been a necessity, and would greatly facilitate the pumping which was needed to meet the demands of the public. He congratulated the meeting on the continued prosperity of the undertaking; mentioning that on the half year there had been an increase of revenue to the extent of £1300. The resolution for the adoption of the report and the payment of the full statutory dividend was carried unanimously; and the proceedings concluded with a vote of thanks to the Chairman and Directors.

South African Lighting Association, Limited.

In the report for the year ended Dec. 31, to be presented at the meeting next Thursday, the Directors of the South African Lighting Association say that the depression of trade and the competition by electric light, referred to in the two last reports, have been continued; but as a set-off to this, there has again been a satisfactory increase in the number of new consumers. The average consumption per consumer has declined, and the total sale at Port Elizabeth shows a small decrease. At Grahamstown, on the other hand, the total sale shows an increase. At the latter town, the Association were involved in a claim arising from a fire on the premises of a consumer; and on the hearing of the case, judgment was given against the Association. The consequent loss and law costs the Board propose during the present year to charge to the reserve account. The Directors offered, in February last, a further 1000 shares to the proprietors. This capital was required to provide for extensions of mains and new plant, the acquisition of some further land, and for additional working capital. The balance of profit and loss account, including the amount brought forward from 1906, after payment of debenture interest and income-tax, is £9761. An interim dividend was paid in October, 1907, at 4 per cent., amounting to £3200, leaving available a sum of £6561. The Directors now recommend a final distribution of 6 per cent. (making 10 per cent. for the year) free of income-tax, which will absorb £4800, leaving to be carried forward a balance of £1761.

Reduction in Price at Bingley.—The sale of gas at Bingley last year amounted to 103¾ million cubic feet; and there was a net profit of £697 on the working. In submitting this report to the Urban District Council, the Gas Committee recommended that the price of gas should be reduced 1d. per 1000 cubic feet; and, after some discussion and a division, this course was agreed to.

THE
PARKINSON
STOVE CO., LTD.
SLOT COOKERS

Intermediate Grade
COOKERS.

Write—
THE PARKINSON STOVE COMPANY, LTD.,
Stour Street, Spring Hill,
BIRMINGHAM.

Criccieth Water-Works Purchase.—In the present session of Parliament the Criccieth Urban District Council promoted a Bill to enable them to purchase the undertaking of the local Water Company. The award in the arbitration between the Council and the Company is to the effect that the former are to pay a sum of £5649.

Cheaper Gas for Blackpool.—The Blackpool Corporation Gas Committee have decided to reduce the price of gas from 2s. 4d. to 2s. 2d. per 1000 cubic feet. It was stated that, despite an increase of £6974 in the cost of coal last year, £11,000 had been handed over to the relief of the rates, and £2106 placed to the reserve fund.

Smethwick Gas Undertaking.—At a meeting of Smethwick Town Council last Thursday, the Gas Committee reported that the sale of gas for the financial year ended March 31 was 438,651,700 cubic feet, an increase of 23,535,400 cubic feet, or 5·67 per cent., over the previous year. The gas-rental amounted to £52,257, an increase of £2829.

Explosion at the Sevenoaks Gas Offices.—As the result of using a lighted match to find a leakage in a gas-pipe under the floor of the Sevenoaks Gas Company's offices one day last week, a clerk named Howse caused a violent explosion. He pulled up a floor board in the principal office, and then struck the match. The explosion which followed blew out the office windows, and also the plate-glass window of the show-room, which is divided from the office by a passage-way. Howse was thrown some distance, and received nasty injuries to his eyes and face.

Fire and Explosion in Pall Mall.—Consequent on a short-circuit in the main electric light fuse, which exploded the gas accumulated through the main being laid in bitumen, there was an outbreak of fire last Saturday morning in Pall Mall; but happily, owing to the early hour, no personal injuries resulted. By the explosion, two service boxes of the Electric Light Company were blown into the air; and flame was seen ascending from the pavement. Serious damage resulted to the premises of a firm of outfitters, and also to those of some wine merchants. The flames were at last overcome by the use of quantities of sand.

Year's Working at Haverhill.—In presenting the report on the past twelve months' operations of the gas undertaking to the Haverhill Urban District Council, Mr. J. B. Coster remarked that the year had turned out pretty much as they expected. The increased quantity of gas sold amounted to about 3¼ per cent. Of the £200 extra received on account of gas, £110 was due to the higher price, and £90 to the greater quantity sold. They had had to pay a larger sum for coal; and the extra 2s. 6d. per ton represented about £220. The profit had been £569, against £682 for the previous year. They had expected this, however, as they knew they were going to experience a more difficult year; and this was the reason the price of gas was put up.

Gas Suicide Case at Leeds.—At Hallam's Northern Hotel, Leeds, last Friday afternoon, it was discovered that one of the visitors had not left his bedroom; and after knocking some time, the door was forced. The man in question (who had been staying in the hotel for some days, and had given his name as Leech) was found sitting on a chair; and over his head was drawn a pillow-case, into which he had inserted a tube connected with a gas-tap turned full on. The end of the tube was in the man's mouth. When discovered he had been dead for some hours. Later reports state that deceased was Mr. Frank Leech, son of Sir Bosdin Leech, of Manchester. He was supposed to be following his profession as a civil engineer in Hanover; and his friends are at a loss to explain his presence in Leeds.

Expenditure by the London Water Companies and the Metropolitan Water Board.—On Monday last week, Mr. Bowles, the Conservative Member for Norwood, asked the President of the Local Government Board whether he could state the total expenditure of all the Water Companies absorbed by the Metropolitan Water Board during the last year of their separate existence, and the total expenditure of the Board during its last completed financial year. The next day, Mr. Burns replied that he was informed the accounts of the Board for the financial year 1907-8 were not completed, but that the Board's total expenditure for 1906-7 amounted to £3,233,042, including £391,454 in respect of capital expenditure. The corresponding expenditure of the Water Companies for the last available complete year of their existence was £3,496,347, including capital expenditure of £827,045.

The Plymouth "Fyshynge Feaste."—A controversy which has caused some heartburning in Plymouth has been set at rest by a decision at which the Town Council arrived last week. Hitherto the annual visit of the Corporation to the water-works—which is known as the "Fyshynge Feaste," and is supposed to have originated in Elizabethan times—has been held at the expense of the ratepayers. All the councillors and the principal officials of the borough have been accustomed to attend, and there have been a few specially invited guests in addition. For some years the economists in the Council have loudly complained of this "feaste" being a charge on the rates; and in one way or another the cost has been reduced. Last week it was decided, by a majority of nearly two to one, that the gathering should be held as usual, "provided that no expense falls upon the Corporation." This means, of course, that the councillors and officials who attend will have to share the cost.

Prepayment Meter Robbery.—Before Mr. Biron, at the Old Street Police Court, last Wednesday, Harry Horne (aged 18) and Frederick Bauneack (aged 19), both giving common lodging houses in Bow as their addresses, were charged with being concerned together in stealing 4s. 11d. from a prepayment gas-meter at No. 78, Tredegar Road, Bow, on Feb. 8. Mr. Young, who prosecuted for the Commercial Gas Company, said that Horne's mother occupied apartments in the house until Feb. 3, on which day she was taken to a hospital. Shortly afterwards, her son, who had lived with her, appeared at the house with Bauneack, and in the temporary absence of the occupier of the other rooms the two broke open the meter, divided the contents, and decamped. Detective Ryan said there was a further charge against both prisoners of stealing bicycles; and previous convictions were also proved. Mr. Biron remarked that under the circumstances he should decline to deal with the prisoners, and committed them to the Sessions.

The
'NEW DAVIS'
Cooker.

Some of its Points:

- *Green Enamelled Steel inside and out.*
- **There are no screws used in the construction of the oven.** *Here is an Ideal—especially from a maintenance point of view.*
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May we send you a copy of our dainty New Booklet — S/8 — giving full particulars?

DAVIS
The Gas Stove People,
Camberwell, S.E.

Sale of Shares.—At a recent auction sale at Southsea, some £10 original shares in the Borough of Portsmouth Water-Works Company realized £25 each.

Price of Gas at Salford.—At the next meeting of the Salford Town Council, a proposal will be submitted to take off the 3d. per 1000 cubic feet by which the price of gas was increased last year. This will make the charge again 2s. 7d., subject to the usual discount.

Automatic Lighters at Tottenham.—The Tottenham and Edmonton Gas Company having proposed to continue the fixing of automatic lighters on the Rostin system to the public lamps throughout the parish, the Engineer to the Tottenham Urban District Council suggested that, in view of the fact that the automatic lighting effects a considerable saving to the Gas Company, the Council should agree to the system being extended as contemplated, providing the Company reduce the existing charges for public lighting. The suggestion of the Engineer was adopted.

Price of Gas for Industrial Purposes in Birmingham.—In a report by the "Interests of Retail Traders" Section which has been adopted by the Birmingham Chamber of Commerce, it was recommended that further representations should be made to the Corporation Gas Department urging that gas used by traders for heating irons, stoves, &c., should be charged on the same scale as gas used for motive power purposes. It was pointed out by the Section that the gas so used was for manufacturing, and not lighting, purposes; and that such traders gave the department a substantial day load, which must be a factor in economic production.

Coventry Gas Undertaking.—A highly satisfactory result has been obtained in the management of the Coventry Corporation gas undertaking for the past twelve months. The accounts for the year ending March 31 show a net profit (including the balance of £1492 brought forward) of £9953. The Gas Committee have decided to make the following recommendations to the City Council: (1) That £3000 be paid over in aid of the rates; (2) that £6000 be set aside to meet the loss of capital consequent on the abandonment of plant at the old works, making, with the sum already set aside, £16,000 towards the £50,000 estimated total amount of loss; and (3) that the balance of profit of £953 be carried forward to the next account. Complaints having been made from time to time of the large amount of sulphur in the gas, experiments are to be tried during the coming summer with a view to a reduction of this by the adoption of a modified system of purification. At the last meeting of the City Council, a member complained of the amount of smoke and smell from the old gas-works, and said the nuisance had become so great that he could not put up with it any longer. Mr. Batchelor, the Chairman of the Gas Committee, said the Committee regretted the amount of smoke; but the works really could not be kept up to a perfect state now that they were about to leave them. He was afraid he could not promise to abate the nuisance; but it would not be long before they transferred the work entirely to Foleshill.

Gas Workers' Wages at Burslem.—Speaking in the Burslem Town Council, Mr. Parkes expressed a desire that the £4500 profits from the gas-works to be handed over in reduction of the rates should be reduced by £250, and this be held in hand until a letter forwarded to the Council by the gas workers had been considered by the Council or the Gas Committee. The Clerk said he understood that Mr. Parkes wanted the money to be kept in hand with a view, if the Council thought fit, to its benefiting the gas workers. Mr. Parkes acquiesced, and said the letter seemed to show that the men had suffered a reduction in one way or another. He understood the Gas Committee had not considered the letter, and thought the matter might await their doing so. It was agreed that the question should be considered by the Committee.

Gas Purchase Question at Warrenpoint.—At the last meeting of the Warrenpoint Urban District Council, the Clerk said the Local Government Board had written in respect to the proposal of the Council to purchase the gas-works, stating that they awaited the decision of the shareholders of the Company. The Clerk read the letter which he had previously forwarded to the Board on the matter, in which it was stated that the Council believed the lighting of the town could be more efficiently maintained and extended, and that the ratepayers could get better and cheaper gas, if the undertaking were in the hands of the Council. The Directors of the Gas Company had offered the concern at £2350; and the Council obtained the services of an eminent firm of engineers, who recommended them to purchase. At a conference subsequently held, the Directors agreed to recommend the shareholders to accept £2125; and the Council were now willing to purchase at this price, subject to the approval of the Board. The shareholders have since agreed, with one dissentient, to sell the undertaking at the price named, exclusive of the stocks of coal, &c.

The Matlock and District Gas Company have placed the order for condensers recently advertised for with Messrs. Robert Dempster and Sons, Limited, of Elland.

The Directors of Meters Limited in their report for the year ending March 31 state that the trading has resulted in a gross profit of £25,949, which is reduced by general management expenses, Directors' fees, legal charges, expenses on patents, income-tax, and depreciation of buildings, machinery, and plant. A sum of £3031 has been spent out of revenue on repairs and renewals. After providing for interest on debenture stock (£5671), the net profit amounts to £15,102, which, with £2885 brought forward, makes £17,987, out of which interim dividends at the rates per annum of 5½ per cent. upon the preference shares and 4 per cent. upon the ordinary shares were paid in November last. The Directors now recommend the payment of further dividends at the rates per annum of 5½ per cent. upon the preference shares, and of 6 per cent. upon the ordinary shares (making the ordinary dividend 5 per cent. for the year); and that the balance of £3059 be carried forward to next year's accounts.

"ILLUMINATING TRUTHS."

LEAFLETS FOR DISTRIBUTION.

No. 1.—"The Sanitary Aspects of Gas and Electric Lighting."
No. 2.—"The Cleanliness of Illuminants: The Eyesight."
No. 3.—"Fire Risks."
No. 4.—"The Relative Cost of Gas and Electricity, and Matters affecting it."
No. 5.—"On Reliability, with Instances of Misplaced Confidence."
No. 6.—"On Shop Lighting, with Special Reference to the Flame Arc Lamp."
No. 7.—"The Osram Lamp: Fiction and Fact."

This series of Leaflets will be useful, not only for distribution among Householders generally, but for circulation among Shareholders to fortify them with arguments defence of the commodity in which they have invested capital. Copies of each Leaflet should also be kept in every Gas Undertaking's Show-Rooms.

Prices for Quantities on Application to WALTER KING, 11, BOLT COURT, FLEET STREET, E.C.

WANTED, FOR SALE, CONTRACT, &c., ADVERTISEMENTS IN THIS WEEK'S "JOURNAL."

Situations Vacant.

DRAUGHTSMAN-ESTIMATOR. Ashmore, Benson, Pease, and Co., Stockton-on-Tees.
REPRESENTATIVE (PART SERVICES). No. 4942.
RESIDENT ENGINEER. Fylde Water Board. Applications by June 25.

Situations Wanted.

ENGINEER. No. 4943.
STOKER. Stone, Tenterden.
WORKING MANAGER. No. 4944.

Capitalists Wanted (Erecting and Buying Gas-Works). No. 4940.

Gas Examination Classes.

CORRESPONDENCE COLLEGE COMPANY, CAMBRIDGE.

Plant (Second-Hand), &c., for Sale.

CONDENSERS, ENGINES AND EXHAUSTERS, SCRUBBERS, PURIFIERS, RETORT-HOUSE FITTINGS, &c. Ellis, Etruria Works, near Stoke.
PURIFIER VALVES. Malton Gas Company.
RETORTS, HYDRAULIC MAINS, MOUTHPIECES, PIPES, &c. Gosport Gas-Works.
TESTING APPARATUS AND TECHNICAL JOURNALS. Executors of the late Mr. F. H. Leeds, Bridport.

Stocks and Shares.

BARKING GAS COMPANY. May 27.
CHIGWELL, LOUGHTON, AND WOODFORD GAS COMPANY. May 27 and June 16.
DARTFORD GAS COMPANY. June 2.
FALMOUTH WATER COMPANY. June 16.
GRAVESEND AND MILTON GAS COMPANY. June 2.
GRAYS AND TILBURY GAS COMPANY. June 2.
HAYWARDS HEATH GAS COMPANY. June 16.

Stocks and Shares—*continued.*

LEA BRIDGE GAS COMPANY. June 2.
LOWESTOFT WATER AND GAS COMPANY. May 27.
MAIDENHEAD GAS COMPANY. May 27.
SOUTH AFRICAN LIGHTING ASSOCIATION. June 2.
SOUTHEND WATER COMPANY. June 2.
TENDRING HUNDRED WATER-WORKS COMPANY. May 27.
UXBRIDGE GAS COMPANY. June 2.
WALKER AND WALLSEND GAS COMPANY. June 3.
WEST KENT GAS COMPANY. June 2.

Patents for Disposal or Licences to Work.

COKE OVENS, &c. Abel and Imray, Birkbeck Bank Chambers, W.C.
GAS PRODUCERS, &c. Redfern and Co., South Street, Finsbury, E.C.

TENDERS FOR

Coal and Cannel.

BANGOR (CO. DOWN) GAS DEPARTMENT. Tenders by June 16.
BRIDGNORTH GAS DEPARTMENT. Tenders by June 13.
BURY CORPORATION. Tenders by June 9.
CARLISLE GAS DEPARTMENT. Tenders by June 1.
COALVILLE GAS DEPARTMENT. Tenders by June 15.
DENBIGH GAS AND WATER COMPANIES. Tenders by June 3.
HALESWORTH GAS COMPANY. Tenders by June 3.
HALIFAX GAS DEPARTMENT. Tenders by June 2.
HAVERHILL DISTRICT COUNCIL. Tenders by June 6.
ISLE OF THANET GAS COMPANY. Tenders by June 18.
LEEK GAS DEPARTMENT. Tenders by June 3.
LINCOLN GAS DEPARTMENT. Tenders by June 12.
LOUTH GASLIGHT COMPANY. Tenders by June 2.
MORECAMBE GAS DEPARTMENT. Tenders by May 29.
NESTON AND PARKGATE GAS COMPANY. Tenders by June 18.
NOTTINGHAM WATER DEPARTMENT. Tenders by

Coal and Cannel—*continued.*

OXFORD GASLIGHT COMPANY. Tenders by June 10.
PAIGNTON GAS COMPANY. Tenders by June 13.
PENRITH GAS DEPARTMENT. Tenders by June 2.
PETERBOROUGH GAS COMPANY. Tenders by June 8.
PONTEFRACT CORPORATION. Tenders by May 30.
SEDGLEY GAS DEPARTMENT. Tenders by June 3.
SHREWSBURY GAS COMPANY. Tenders by June 13.
SLOUGH GAS COMPANY. Tenders by June 9.
TAUNTON GASLIGHT COMPANY. Tenders by July 1.
TIVERTON LIGHTING COMMITTEE. Tenders by May 30.
WOOLWICH BOROUGH. Tenders by May 29.

Incandescent Mantles, Chimneys, &c.

WEST HAM EDUCATION COMMITTEE. Tenders by June 15.

Meters.

PONTEFRACT CORPORATION. Tenders by May 30.

Pipes, &c.

BRIDGNORTH GAS DEPARTMENT. Tenders by June 13.
NOTTINGHAM WATER DEPARTMENT. Tenders by June 1.
PONTEFRACT CORPORATION. Tenders by May 30.

Tar and Liquor.

ACCRINGTON GAS AND WATER BOARD. Tenders by June 8.
LEEK GAS DEPARTMENT. Tenders by June 3.
STRETFORD GAS COMPANY. Tenders by June 15.

Valves, Cocks, Hydrants, &c., Lead, Lead Piping, &c.

NOTTINGHAM WATER DEPARTMENT. Tenders by June 1.
PONTEFRACT CORPORATION. Tenders by May 30.

The Stockport Gas Committee have acceded to the request of a deputation from the local Tradesmen's Association that they should supply gas free of charge for the special illuminations which it is desired to make on the occasion of the Royal visit. A similar application with regard to electric current is receiving the consideration of the Electricity Committee.

The result of the sale by auction of £5000 of new ordinary stock of the Cleethorpes Gas Company, recently advertised in the "JOURNAL," was as follows: £100 of stock fetched £148; £200 was sold at £148 10s. per £100 of stock; £400, at £149; £800, at £149 10s.; £2200 at £150; and £1300 at £150 5s. The sale produced £7490 5s., or an average of £149 16s. per £100 of stock.

From the £14,000 reserve, made as profits at the electric lighting works by the Portsmouth Corporation, £9000 has been loaned to the Portsmouth Water-Works Company at 3½ per cent. per annum. There is an agreement by which the loan can be called in or paid off after six months' notice. The money will partly pay for the Water Company's filtering works at Bedhampton and Portsdown Hill, where already good progress is visible.

The Tourtel Pressure Lighting Company, Limited, has been registered with a capital of £6000 in £1 shares, to adopt an agreement between J. M. Tourtel and W. R. Mealing, of the first part, the Tourtel Manufacturing Company, of the second part, E. Le Bas, J. T. Bibby, and J. E. Harwood, of the third part, and the Company, of the fourth part, and to carry on the business of manufacturers of and dealers in apparatus used in connection with the distribution, supply, and employment of gas for light, heat, or power, &c.

The Dorchester Gas Company, in conjunction with the Davis Gas-Stove Company, have lately held a successful four days' exhibition at the Town Hall. Cookery lectures were given daily by Mrs. Godfrey Sutcliffe, who prepared and cooked in one hour, with a consumption of 33½ cubic feet of gas, a dinner consisting of fish, sirloin of beef, fowl, vegetables, fruit pies, pastry, &c. Another item of interest was a children's cookery competition, in which twelve Dorchester school girls took part. Mr. Frank Osmond, the Manager of the Company, and a staff introduced to the visitors the latest types of cooking stoves and other culinary conveniences, improved burners, and the various up-to-date appliances on show; and the exhibits included a furnished drawing-room and a bed-room, fitted with gas fires and lights.

During the evening of last Saturday week, several shops and cellars were flooded by the bursting of a water-main in Mosley Street, Manchester. Portions of the roadway and the footpath were torn up; and considerable subsidence was caused in the vicinity.

Mr. J. W. Buckley, the Engineer and Manager of the Devonport Corporation Gas-Works, on Saturday opened a new bowling green for a club in connection with the gas-works. Miss Le Bailly, daughter of the Hon. Secretary of the Club, and Mr. W. H. Owen, Captain of the Club, presented a silver salver to Mr. Buckley, the President, as a memento of the occasion. Mr. Buckley, in acknowledging the gift, said he was proud to tell them, after three years' working, that the Chairman of the Gas Committee, in the statement he would have to submit to the Council shortly, would be able to say that the financial condition of the Gas Department would bear favourable comparison with that of any works under similar conditions. As to the consumers, the list of complaints, compared with the number some time ago, showed they were fairly satisfied. Alderman Hornbrook, the Chairman of the Gas Committee, said the past year's results were such that he thought they would have to apologize for having suggested increasing the price, because there was no necessity for it.

Members of the local Scientific and Engineering Societies recently paid a visit to the Ipswich Gas-Works, on the invitation of the Engineer (Mr. J. T. Jolliffe), to inspect the plant that has been recently installed; and in showing the party round and explaining the different appliances and processes, assistance was lent by Mr. Frank Prentice and other members of the staff. The De Brouwer retort charging and discharging machinery, the carburetted water-gas plant, and the arrangements for the recovery of sulphur and cyanogen were special objects of attention. In response to a vote of thanks, Mr. Jolliffe said he hoped that the visitors would go away with the impression that the Gas Company were trying to serve the public to the best of their ability. As engineers and scientists, they had doubtless made a note of the labour-saving machinery. It was, of course, absolutely necessary to adopt this machinery; but it certainly assisted to throw some men upon the unemployed market, and in this respect it had an aspect of sadness for him and his colleagues. Gas making was a most delightful occupation. It was so varied in character—embracing so many sciences—that those engaged upon it were never left to grow stale or neglectful of new opportunities.

NOTICES TO CORRESPONDENTS, ADVERTISERS, AND SUBSCRIBERS.

No notice can be taken of anonymous communications. Whatever is intended for insertion in the "JOURNAL" must be authenticated by the name and address of the writer; not necessarily for publication, but as a proof of good faith.

COPY FOR ADVERTISEMENTS for the "JOURNAL" should be received at the Office NOT LATER than TWELVE O'CLOCK NOON ON MONDAY, to ensure insertion in the following day's issue.

Orders for Alterations in, or stoppages of, PERMANENT ADVERTISEMENTS should be received by the FIRST POST on SATURDAY.

Wanted, For Sale, and Tender Advertisements, Six Lines and under, 3s.; each additional Line, 6d.

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All Communications, Remittances, &c., to be addressed to WALTER KING, 11, BOLT COURT, FLEET STREET, LONDON, E.C.

Telegrams: "GASKING, LONDON." Telephone: P.O. 1571a Central.

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O'NEILL'S OXIDE

For GAS PURIFICATION.

LARGEST SALE OF ANY OXIDE.

SPENT OXIDE PURCHASED IN ANY DISTRICT.

GAS PURIFICATION & CHEMICAL CO., LD., PALMERSTON HOUSE, OLD BROAD STREET, LONDON, E.C.

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"VOLCANIC" FIRE CEMENT.

Resists 4500° Fahr. Best for GAS-WORKS.

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GAS PLANT for Sale—We can always offer NEW and SECOND-HAND GAS APPARATUS, including Retorts and Fittings, Condensers, Exhausters, Scrubbers, Washers, Purifiers, Gasholders, Tanks, Valves, Connections, &c. Also a few COMPLETE WORKS. Compare Prices and Particulars before ordering elsewhere.

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BROTHERTON AND CO., LTD., Tar Distillers. Works: BIRMINGHAM, GLASGOW, LEEDS, LIVERPOOL, WAKEFIELD, AND SUNDERLAND.

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Consumers in any form are invited to correspond with CHANCE AND HUNT, LTD., Chemical Manufacturers, OLDBURY, WORCS.

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Telegrams: "HYDROCHLORIC, LONDON."

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LUX'S GAS PURIFYING MASS.

See Advertisement on p. 473.

FRIEDRICH LUX, LUDWIGSHAFEN-AM-RHEIN.

JOHN RILEY & SONS, Chemical Manufacturers, Hapton, near Accrington, are MAKERS of Special SULPHURIC ACID, for Sulphate of Ammonia Making. Highest percentage of Sulphate of Ammonia obtained from the use of this Vitriol, which has now been used for upwards of 50 Years. References given to Gas Companies.

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PUBLICATIONS, "MERCHANDISE MARKS ACT, and Decisions thereunder," 1s.; "TRADE SECRETS v. PATENTS," 6d.; "DOCTRINE of EQUIVALENTS, Mechanical and Chemical," 6d.; "SUBJECT-MATTER of PATENTS," 6d.

MEWBURN, ELLIS, & PRYOR, Chartered Patent Agents, 70 & 72, Chancery Lane, London, W.C. Telegrams: "Patent London." Telephone: No. 243 Holborn.

ROBERT DEMPSTER & SONS, Ltd.,
Contractors for Complete CARBONIZING PLANTS and every description of GAS APPARATUS and ELEVATING and CONVEYING PLANT, Rose Mount Iron-Works, Elland.

D. ANDERSON AND COMPANY,
GAS LIGHTING ENGINEERS AND CONTRACTORS,
73, FARRINGDON ROAD, LONDON, E.C.
Telegrams: "Dacolight London." Telephone: 2336 Holborn.

AMMONIACAL Liquor wanted.
Brotherton and Co., Ltd., Ammonia Distillers. Works: Birmingham, Glasgow, Leeds, Liverpool, Wakefield, and Sunderland.

HYDRATED OXIDE OF IRON.
PREPARED from Pure Iron.
Twice as Rich as Bog Ore.
Gives no back Pressure.
The Cheapest in the Market.
Read Holliday and Sons, Ltd., Huddersfield.

TO Gas Managers, &c., Wanted, Old Condemned GAS-METERS, from 1-light to 1000-light, for destruction to re-claim Metals. Write for Prices, Stating Quantities and Sizes, and if Wets or Drys. Scrap Metals, Drosses, Metal Shop Sweepings, &c., also bought
J. Wilson, Pleasant Grove, York Road, King's Cross, London, N.

GAZINE—A radical Solvent and Pre- ventative of Naphthalene deposits, and the Automatic cleaning of Mains and Services.
It is also used for the Enrichment of Gas, and has an illuminating value double that of 90 per cent. Benzol.
Supplied by C. Bourne, West Moor Chemical Works, Killingworth, or through his Agent, F. J. Nicol, Pilgrim House, Newcastle-on-Tyne.
Telegrams: "Doric," Newcastle-on-Tyne. National Telephone No. 2497.

INSURANCE—H. F. LAMSDEN, Insurance Broker (Established 1888), 19 & 21, Queen Victoria Street, London, E.C., quotes BOTTOM LONDON RATES FOR EMPLOYERS' LIABILITY UNDER THE NEW ACT. Collective Fidelity Guarantee and THIRD PARTY, INCLUDING DAMAGE CAUSED BY GAS EXPLOSION, Marine, Fire, and Loss of Profit in case of Fire. Motor-Car, Boilers, Engines, Lifts, Cranes, all classes of Machinery, and Plant. Payment of Trade Acceptances and Open Credits Guaranteed. Excess Bad Debt Policies fixed on the most favourable Terms.

SULPHURIC ACID.
SPECIALLY prepared for Sulphate of AMMONIA Makers by
CHANCE AND HUNT, LIMITED,
Works: Oldbury, Wednesbury, and Stafford.
Address Correspondence and Inquiries to Oldbury, Worcs.
Telegrams: "Chemicals, Oldbury."

"NUGEPE" GAS PLANT CEMENT.
JOHN E. WILLIAMS AND CO.,
LOWER MOSS LANE,
MANCHESTER, S.W.
For all Joints in connection with Oil-Gas Plant and Sulphate Plant.
For all Gas Joints.
For all Tar Joints.
For all Ammonia Joints.

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BLUE WATER GAS, CARBURETTED WATER GAS, SELF-CARBURETTING.
FOR list of towns in which Plant has been Installed, see advertisement in the "Journal" for May 5, p. 822.
The Dellwik-Fleischer Water Gas Syndicate, Belgravia Chambers, 72, Victoria Street, Westminster, London, S.W. Telegraphic Address "Dellwik, London."

AMMONIACAL Liquor wanted.
Chance and Hunt, Ltd., Chemical Manufacturers, Oldbury, Worcs.
Telegrams: "Chemicals."

SULPHATE OF AMMONIA SATURATORS and all LEAD and TIMBER WORK in Connection with Sulphate Plants.
We guarantee promptness, with efficiency for Repairs.
Joseph Taylor and Co., Central Plumbing Works, Bolton.
Telegrams: Saturators, Bolton. Telephone 0848.

IMPORTANT Notice to Gas Companies, Corporations, &c.—INCANDESCENT MANTLE ASH BOUGHT. Any Quantities. Best Prices.
Incandescent Supply Company, 2, Gray's Inn Road, London.

GAS OILS.
MEADE-KING, ROBINSON, & CO. Represent the Strongest Independent Refineries in America; also Petroleum Spirit for Gas Enrichment. 18, Exchange Street, Manchester, and 11, Old Hall Street, Liverpool.

CITY AND GUILDS.
FULL Year's Course now Starting in GAS ENGINEERING and GAS SUPPLY. Fees low. Success certain.
Secretary, Correspondence College Company, 26, Green Street, Cambridge.

YOUNG Man with Two Years' Ex- perience in Gas-Works as STOKER seeks Situation. Age 23. Single, Able, Strong, and Willing. Good Reference.
F. Stone, West Cross, Tenterden, Kent.

WANTED, re-engagement as Working MANAGER. At present Managing a 6 Million Works. Practical Main and Service Layer. Good Carbonizer. Well recommended. Can show good cause for Change. Age 25. Married.
Address No. 4944, care of Mr. King, 11, Bolt Court, Fleet Street, E.C.

ENGINEER (Age 23) is Desirous of finding permanent Shore Engagement. Has had Six Years Workshop Experience (Thames Iron-Works Company) and Eighteen Months Sea Service in the P. & O. Good References. Fair knowledge of Electrical Work, &c.
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A FIRM of Gas Engineers require a REPRESENTATIVE to call at Gas-Works in the Eastern and Southern Districts, on Commission. Exclusive Services are not required.
Apply, stating Age, Experience, and Terms, to No. 4942, care of Mr. King, 11, Bolt Court, Fleet Street, E.C.

A DRAUGHTSMAN-ESTIMATOR wanted immediately Must be thoroughly Experienced and Accustomed to Gas-Works Plant (none other need Apply). Quick and Accurate in taking out Quantities.
State Experience, Age, Salary required, and when at liberty, to Ashmore, Benson, Pease, and Co., Limited, Stockton-on-Tees.

WANTED, a few Gentlemen with Capital, interested in Gas-Works, to form SYNDICATE for ERECTING NEW WORKS in suitable Districts, and BUYING UP existing Works which have been neglected, for Exploiting the same and Selling to Local Authorities; Advertiser frequently meeting opportunities, but for want of Capital cannot take advantage.
Address No. 4940, care of Mr. King, 11, Bolt Court, Fleet Street, E.C.

FYLDE WATER BOARD, LANCASHIRE.
THE Board invite Applications for the Position of RESIDENT ENGINEER to the Board, to advise as to a further Gravitation Scheme with Service Reservoir, to carry out any adopted Scheme, and to act generally as Engineer to the Board, except with respect to the completion of the New Reservoir Works at Grizedale Lea now in progress.
The area of the Board includes the Towns of Blackpool, Fleetwood, Lytham, St. Annes-on-the-Sea, and about 30 other Townships.
The person appointed must devote his whole time to the Service of the Board.
Salary, £400 a Year, rising by annual increments of £50 each to £500.
Forms of Application may be obtained from the undersigned, to whom Applications, with not more than four recent Testimonials, must be sent before the 25th of June, 1908.
Canvassing is prohibited.
T. Loftos,
Clerk and Solicitor to the Board.
Blackpool, May, 1908.

FOR SALE—Two Cripps's Bye-Pass PURIFIER VALVES. Size, 10-inch.
Malton Gas Company, Malton, Yorks.

WE have the following New and Over- hauled Second-Hand PLANT FOR SALE:—
Gasholder, 8500 cubic feet, New Steel Tank.
Gasholders, 35 ft. by 10 ft., Cast-Iron Tank.
" 45 ft. by 12 ft.
" 50 ft. by 15 ft. 4 in., Telescopic,
Overhauled and re-erected in new Steel Tanks.
8-inch, 9-inch and 10-inch Condensers.
Kirkham Washer (200,000 cubic feet per day).
Walker's Purifying Machine.
Exhausters and Engines, Single and Combined, 2000 to 60,000 feet per hour.
Scrubber, 7 ft. diameter, 55 ft. high.
Purifiers, sets 6-fts., 10-fts., 12-fts., and 20-fts.
Plans and Quotations of new Sets.
6-inch to 18-inch Station Meters, Governors, &c. New Drums.
Tar and Liquor Pumps.
Producer-Gas Plants for 150 to 300 H.P.
Boilers, Tanks, and all requisites for Gas-Works.
Firth Blakeley, Sons, and Company, Limited Thornhill, Dewsbury (Yorks.).

FOR SALE—TESTING APPARATUS AND TECHNICAL JOURNALS.
A HARCOURT 10-Candle Standard PENTANE LAMP by Chance Bros., and Co.; an EXPERIMENTAL GAS-METER ½ cubic foot per rev., by A. Wright and Co.; a ½ cubic foot MEASURE by W. Sugg and Co.; and a CHEMICAL BALANCE by F. G. Becker and Co., 8-inch Beam, Agate Knife Edges, with Box of Weights from 0·001 to 50 grms., with Riders, and another Set from 1 to 500 grms. All in practically New Condition. Set of "JOURNAL OF THE SOCIETY OF CHEMICAL INDUSTRY," 1886 to 1907, bound; "JOURNAL OF THE CHEMICAL SOCIETY," 1883 to 1907, bound Half-Calf; and the "ANALYST," 1895 to 1907, bound.
Offers to the Executors of the late Mr. F. H. Leeds, 28, West Allington, Bridport.

THE Gosport Gas and Coke Company have FOR SALE the following SECOND-HAND PLANT, from a dismantled Retort-Bench, which consisted of:—
Four Beds of Seven ⌂ RETORTS, 18 ft. by 14 ft.
Eight Cast-Iron HYDRAULIC MAINS, 9 ft. by 1 ft. 6 in. diameter, Flat Top, to receive Seven Dip Pipes.
28 MOUTHPIECES, with Self-Sealing Lids.
6-inch to 5-inch ASCENSION PIPES.
5-inch to 4-inch H PIPES.
4-inch DIP PIPES.
Also a Quantity of SCRAP IRON, including Wrought-Iron Tie-Rods, Cast-Iron Buckstays, &c.
Can be seen at the Gas-Works, Gosport.

DISMANTLING of Gas Plant, Etruria, Staffordshire.
CONDENSER, 50 ft. high 3 ft. 6 in. diameter. By Walker's.
ENGINES and EXHAUSTER, 50,000 and 80,000 Cubic Feet per Hour each, with Valves, Regulators, &c. By Bryan Donkin and Co.
SCRUBBERS, by Walker's, 8 feet and 10 feet diameter, 59 feet body, 72 feet high, with Tar-Extracting Washer and Spiral Staircase.
PURIFIERS. Set of Ten, 30 ft. by 15 ft. by 5 ft.; with 24-inch Lutes, Valves, Lifting Gear, &c.
RETORT-HOUSE FITTINGS, GIRDERS, Wrought-Iron PRINCIPALS, 54 feet, 61 feet, and 67 feet 8pan, TURNTABLES, &c., &c.
John Ellis, Etruria Gas-Works, near Stoke; or Miles Platting, Manchester.

ACCRINGTON DISTRICT GAS AND WATER BOARD.
THIS Board invite Tenders for the Surplus TAR and AMMONIACAL LIQUOR which may be produced at the Accrington and Great Harwood Works of the Board, during the Year from the 1st of July next to the 30th of June, 1909.
The estimated quantity of Tar is 2000 Tons; and Liquor, 6000 Tons.
Sealed Tenders, endorsed "Tar and Liquor," addressed to the Chairman of the Board, must be in my hands on or before Monday, the 8th of June.
By order,
Charles Harrison,
General Manager.
General Offices, Accrington,
May 4, 1908.

SLOUGH GAS AND COKE COMPANY.
THE Directors are prepared to receive TENDERS for the Supply of 5500 Tons of Best GAS COAL (Nuts), to be delivered at the Company's Siding on the Great Western Railway at Slough in the usual Monthly Quantities as may be required during the period of One Year from the 1st of July, 1908.
Tenders should state description of Coal and Colliery from where Coal is obtained.
Payment for Coal on or before the 20th of the following Month after delivery.
Tenders to be delivered to the undersigned, endorsed "Tender for Gas Coal," on or before Tuesday, the 9th prox.
Arthur Thomas,
Secretary.
High Street, Slough,
May 15, 1908.

TO COAL CONTRACTORS AND OTHERS.
THE Sedgley Urban District Council invite TENDERS for Supplying 750 to 1000 Tons of GAS COAL, the deliveries to be made at Shut End Siding at such times and in such quantities as may be directed.
It is desirable that a statement of an Analysis of the quality of a Sample of the Coal to be supplied be sent with the Tenders.
Sealed Tenders, marked "Coal," must reach me on or before the 3rd of June, 1908.
The Council do not bind themselves to accept the lowest or any Tender.
By order,
Joseph Smith,
Clerk to the Council.
Offices: High Holborn,
Sedgley, May 12, 1908.

PETERBOROUGH GAS COMPANY.
TENDER FOR COAL.
THE Directors of the above Company invite TENDERS for the Supply of 14,000 Tons of Best Screened Silkstone GAS NUTS for One Year, commencing the 1st of July next.
The Tenders must state the Price of the Nuts delivered into Waggons at the Pit, the Waggon Hire, and the Railway Rate to Peterborough.
Tenders to be sent in by the 8th of June, 1908, endorsed "Coal," and addressed to the Chairman of the Gas Company, Gas-Works, Peterborough.
The Directors do not bind themselves to accept the lowest or any Tender.
Special Tender Forms are not provided.
John Barton,
Secretary and Manager.
Gas-Works, Peterborough,
May 16, 1908.